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PROCEDURES FOLLOWING NEPHRECTOMY

WILLIAM J. MAYO, M.D.

ROCHESTER, MINN.

I. THE TRANSPERITONEAL CLOSURE OF DUODENAL FISTULAS FOLLOWING NEPHRECTOMY

Injuries to the third portion of the duodenum may occur during right nephrectomy. In a previous communication I[1] reported three such cases. The injury is most apt to occur in the attempt to secure the pedicle for the purpose of ligation, and is especially liable to happen when the pedicle is greatly infiltrated with inflammatory products and fixed in close relationship with the duodenum. Under such circumstances, the vascular pedicle of the kidney may slip from the retaining forceps or ligature during attempts at ligation. Efforts to grasp with toothed forceps the bleeding vessels in the bottom of the wound may result in the duodenal injury. The perforation follows after some days due to necrosis of the devitalized portion of the duodenum.

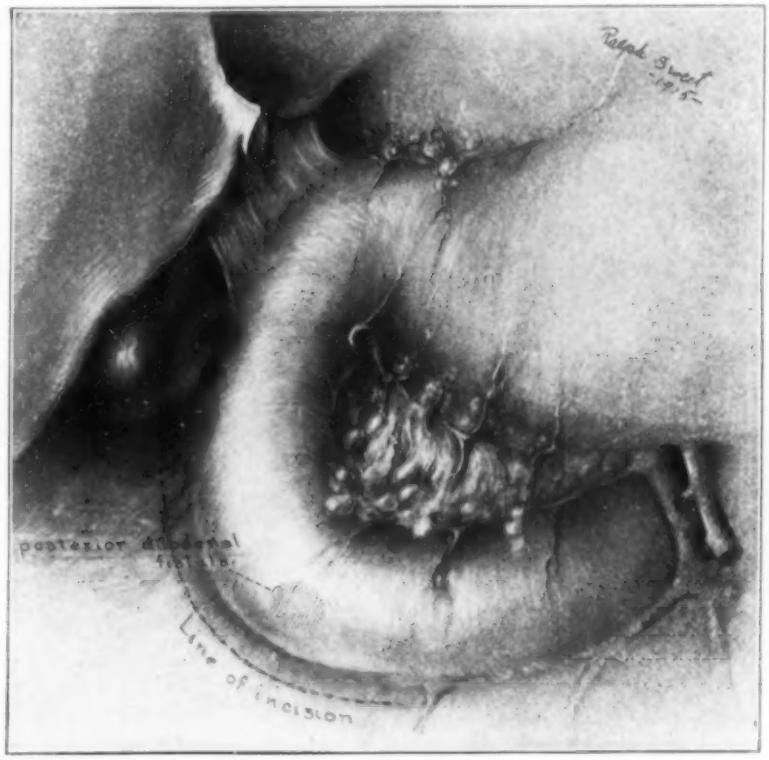

Fig. 1.—Site of duodenal fistula on posterior wall of duodenum, showing line of incision through peritoneum.

All the patients reported on in my first communication died within three weeks from the date of the injury as the result of rapid failure of nutrition. At that time I advised that no attempt be made to close the fistula from behind and that no time be wasted with the expectation of spontaneous closure of the fistula. Instead, as soon as the diagnosis should be established, the abdominal cavity should be opened through the anterior abdominal wall, the peritoneum incised to the right of the curve in the duodenum, the duodenum itself elevated from its retroperitoneal bed at its outer side and the duodenal opening closed directly by suture. Of the three cases reported, in two the duodenal injury occurred at the primary operation and in one it was secondary. In this latter case the physician in charge of the after-care of the patient used a sound to explore a sinus which formed following the nephrectomy and, since the duodenal fistula appeared immediately after the sounding, it was thought that during the manipulation the sound was plunged directly into the duodenum. The case herewith reported belongs to the latter type of injury.

CASE 108397.—H. C. H., a man, aged 46, was admitted to the clinic June 17, 1914. Roentgen-ray examination revealed a single stone in the left kidney and multiple stones in the right kidney. Cystoscopic and ureteral examination showed slightly infected urine and moderately diminished function in the left kidney, while a pyonephrosis with destruction of function was evident in the right kidney. It seemed advisable first to remove the stone from the left kidney, thus restoring it to good function, and to remove the right kidney at a second operation. On June 30, 1914, pelviolithotomy was done and a stone removed from the left renal pelvis. The patient made an excellent recovery from this operation and on Aug. 26, 1914, the right kidney was removed.

Both operations were done through posterior lateral incisions. The wound in the left side healed primarily and was sound before the right nephrectomy was undertaken. On the right side there was primary union; but during the fourth week, without premonitory symptoms, a sinus formed in the wound and continued until the date of reexamination on Jan. 4, 1915. The history showed that when the sinus first formed it caused comparatively little inconvenience, but later

1. Mayo, W. J.: Accidental Injuries to the Descending Portion of the Duodenum During Removal of the Right Kidney, THE JOURNAL A. M. A., Jan. 31, 1914, p. 343.

the patient developed symptoms of septic infection, although without any increase of the local signs. There was an evening temperature of from 101 to 103 F., with occasional chills, general malaise, and loss of flesh. This continued for some weeks, then the patient gradually improved and was able to be about, but the sinus continued to drain a peculiar purulent substance which had somewhat the appearance of gelatin. The total amount discharging from the sinus in twenty-four hours did not exceed 1 or 2 drams.

On Jan. 6, 1915, under ether anesthesia, I enlarged the sinus sufficiently to introduce a finger into the cavity which was of considerable size and quite unlike the ordinary drainage cavity due to sepsis. The space was rather soft and indefinite and there was no apparent retention of secretion in the cavity. A strip of iodoform gauze was placed through the opening. No instrument of any kind was introduced into the cavity. On January 7 there was a very considerable discharge of light yellowish fluid. January 8 the piece of gauze was removed and there was an abundant discharge of bile, pancreatic and duodenal secretion and some particles of food. It was evident that there was a duodenal fistula in the retroperitoneal portion of the duodenum (Fig. 1) but how produced was a mystery.

The patient was at once taken to the operating room, the abdomen opened by an incision through the middle of the upper right rectus muscle, the hepatic flexure and transverse colon drawn down, the liver and gall-bladder up, and an incision made through the peritoneum to the outer side of the duodenum, beginning at the level of the papilla of the common duct and extending around well to the spine. The duodenum was carefully dissected from its posterior attachments until the fistula, which was of sufficient size to admit the end of the finger, was completely separated and exposed in the wound (Fig. 2). The fistula was sutured transversely with chromic catgut and interrupted fine silk, the omentum drawn over the sutured duodenum and the tip passed into the posterior opening from which the fistula had been separated, and attached in position with a few catgut sutures. A rubber-tissue drain was introduced through the sinus opening into the posterior cavity. The operation took but a few minutes and was remarkably easy. The patient made an uninterrupted recovery.

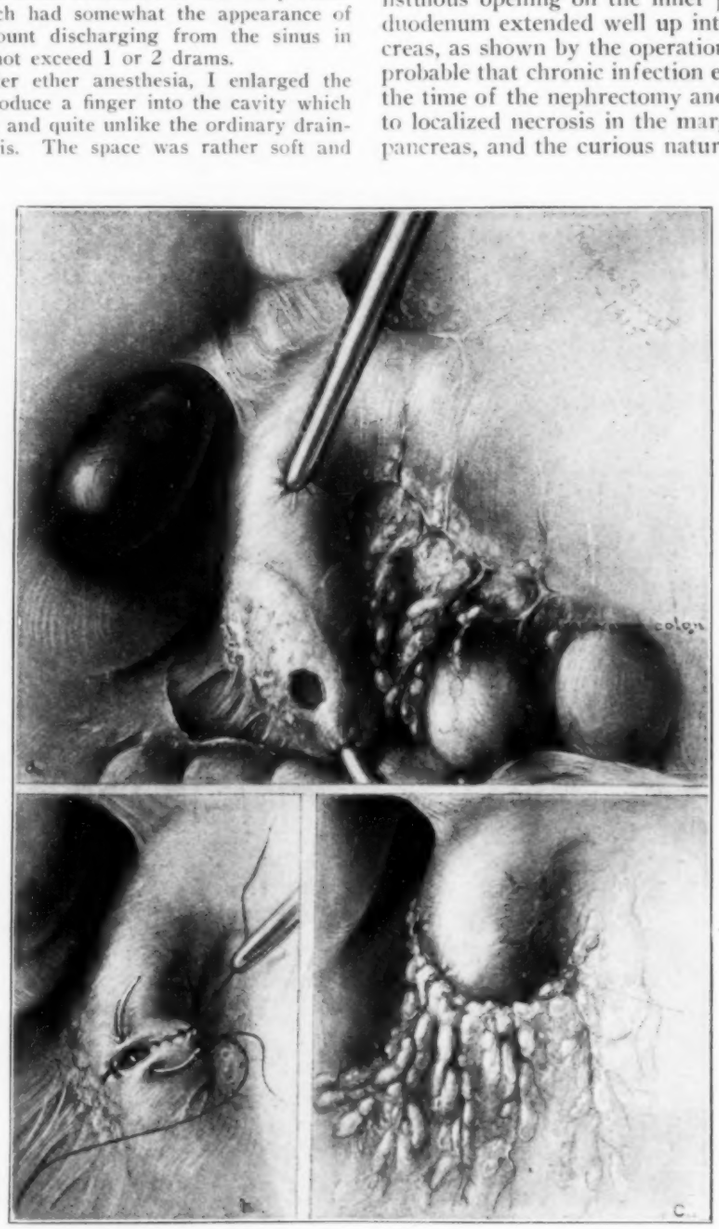

Fig. 2.—Procedure in repair of fistula; *a*, fistula opening dissected from posterior attachment and brought into view; *b*, suturing of fistula; *c*, protecting sutured area with omental graft.

This case brings up the very interesting question: What was the cause of the fistula? The original nephrectomy was subcapsular, and certainly no direct injury to the duodenum occurred during the operation, or the fistula would have developed at once. The fistulous opening on the inner posterior aspect of the duodenum extended well up into the edge of the pancreas, as shown by the operation for its closure. It is probable that chronic infection existed in the pedicle at the time of the nephrectomy and this infected area led to localized necrosis in the margin of the head of the pancreas, and the curious nature of the cavity and its discharge was the result of a little pancreatic secretion in connection with the necrosis. The injury at the time of the exploration certainly could not have been inflicted directly on the duodenum, since, at the time of the closure of the fistula, with the right hand in the abdomen, the first finger introduced through the posterior wall of the abdomen into the cavity and the left forefinger introduced through the lumbar sinus could not be made to meet. It is evident, therefore, that this condition existed as the result of some slow infection, and, in the manipulation, separation of a necrotic area in the duodenum was indirectly brought about.

The transperitoneal approach to the fixed portion of the duodenum has been advised, although in my somewhat superficial examination of the literature I did not find any reported cases of duodenal injury during right nephrectomy. Nevertheless, I am sure that these injuries have occurred, but the seat of the fistula's opening has not been recognized as being duodenal.

Summers[2] treated a gunshot injury in the retroperitoneal part of the duodenum by the transperitoneal route and gave an excellent summary of the somewhat scanty literature which existed at that time.

2. Summers, J. E.: The Treatment of Posterior Perforations of the Fixed Portions of the Duodenum, Ann. Surg., 1904, xxxix, 727-732.

Kanavel,[3] in a careful study of the method of approach to this portion of the duodenum, a method which he used for traumatic rupture, brings the literature up to date. He advised that attack be made from below the colon through the inferior layer of the transverse mesocolon, and this undoubtedly is wise when that portion of the duodenum is injured which lies over the spine toward the duodenojejunal angle. For this particular injury, however, the method of approach from above the transverse colon is so easy and satisfactory that I think it will be the method of choice in such cases. Considerable movability is possessed by this part of the duodenum, its blood supply and fixed portion lying against the pancreas on the inner side to the left, so that almost its whole circumference can be brought into view through this incision.

II. THE TWO-FORCEP METHOD FOR THE LIGATION OF VASCULAR PEDICLES WITH SPECIAL REFERENCE TO NEPHRECTOMY

In the sixteenth century, Ambrose Paré, the Huguenot physician of Catharine de Medici, first applied the ligature to check hemorrhage, and the ligature still remains the method of choice as a means of controlling hemorrhage. One might suppose that experience for nearly 400 years with this effective device would have resulted in a technic nearly perfect, but this is far from the truth. To-day, the most common avoidable cause of death following surgical operations is the effect of hemorrhage, although deaths on the operating table directly from this cause are rare. The most common cause of so-called surgical shock is collapse from loss of blood, and traumatism of important structures in hasty attempts to control hemorrhage. Secondary shock usually means a bleeding vessel overlooked at the time of operation, vessels improperly ligated which commence to bleed after the patient has been placed in bed and the normal vascular tonus has been restored, or massive sepsis from a viscus injured in controlling hemorrhage. Any hospital that is not securing a high percentage of necropsies following surgical fatalities will have a number of unexplained deaths in which, directly or indirectly, hemorrhage is the cause, although not suspected. The surgeon whose work is not checked by necropsies in deaths following his operations usually has many ingenious explanations as to the cause of death, explanations which may appear reasonable and scientific and which occasionally may be correct.

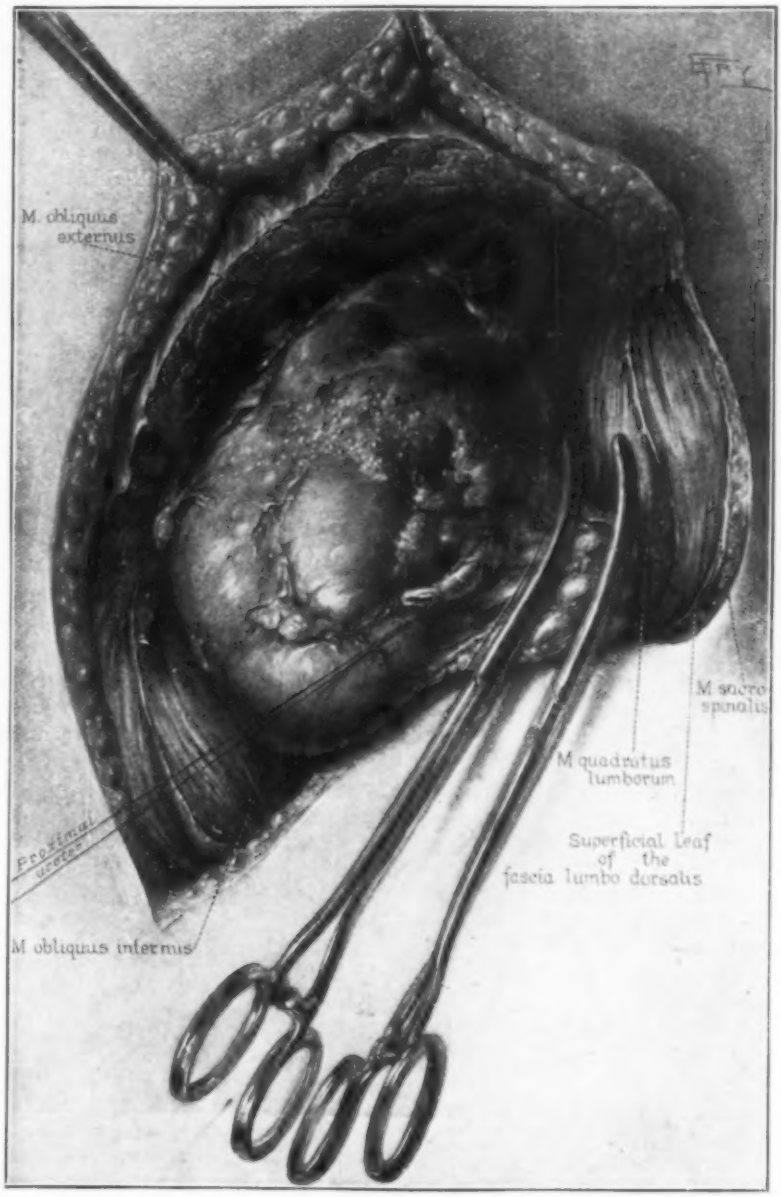

Fig. 3.—Kidney drawn up with two clamps in position; ureter dissected well up to pelvis and hilum of kidney.

At present, in our clinic, necropsies are secured in more than 90 per cent. of all deaths. Either the operating surgeon or the first assistant is present at the necropsy. Thus we secure an enormous amount of information, much of it humiliating to the surgeon and much of it concerning failure of hemostasis.

People die from very real things. When I hear of some surgical fatality explained in some abstruse theoretic manner, I suspect that a post-mortem was not made or, if made, that it was done by a pathologist not competent to judge of the conditions present. For this reason I should urge that the post-mortem shall be held by a competent pathologist who is interested in getting at the facts rather than in endeavoring to conjure up excuses for the surgeon, and that by all means the operating surgeon or his first assistant shall take part in the post-mortem or at least be present. The surgeon should discuss necropsy findings in his clinic, so that by example and precept other lives may be saved. In no other way can he so well atone for his shortcomings. As Lincoln said in

3. Kanavel, A. B.: Mobilization of the Duodenum, Surg., Gynec. and Obst., April, 1914, p. 484.

his Gettysburg address: "These dead shall not have died in vain."

Internal hemorrhage, especially in the abdomen, is not always classical in its symptoms. The blanching, restlessness, air-hunger, subnormal respiration, and increasing rapidity of pulse may not be prominent features. If the hemorrhage is somewhat slow, the patient may not die for several days. Again, the hemorrhage may not be of itself lethal, but may be responsible for a later sepsis by furnishing a culture medium for a few germs which may have been present and

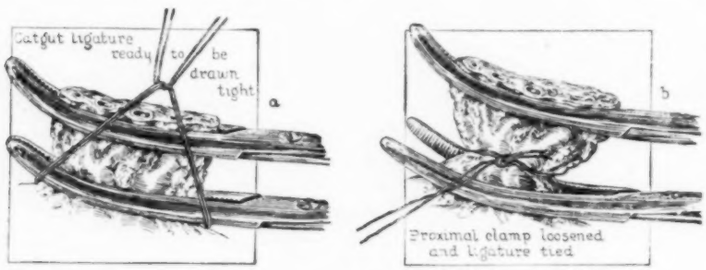

Fig. 4.—Method of procedure in two-forcep ligation of pedicle.

which the tissues otherwise might have been capable of destroying. For this reason any improvement in the technic of hemostasis, however small, has a value even though it only keeps our attention constantly directed toward the necessity for reliable hemostasis.

In the attempt to tie a deeply placed pedicle it occasionally slips out of the grasp of the ligature, permitting rapid and exhausting hemorrhage. This is especially true of the pedicle of the kidney. The surgeon reaches in with forceps and with considerable difficulty, in a pool of blood, succeeds in grasping the vessels. Forceps used in this way are dangerous. In these hurried attempts, if the operation be a right nephrectomy, the vena cava or the retroperitoneal portion of the duodenum may be injured. Vessels the size of the renals can be easily caught and held with the fingers. The spurting of blood leads the fingers directly to the vessels, and forceps can then be applied with care and circumspection.

If the two-clamp method be used for the purpose of ligation, slipping of the pedicle should not occur. The kidney is first exposed through an appropriate incision, such as the posteriolateral which I have previously described.[4] The perirenal fat is separated, the ureter divided between ligatures and the ends sterilized. Forceps should not be left on the portion of the ureter which is to be removed with the kidney, as they may slip or tear off and the wound be soiled from the contents of the renal pelvis. The fragment of ureter to be removed should be dissected well up to the pelvis of the kidney that it may not be tied into the vascular pedicle. The vascular pedicle is now exposed by careful removal of its surrounding fat (Fig. 3). In many cases the vessels can be ligated separately, but if the pedicle is thick and deeply placed, or if the operation be a subcapsular nephrectomy, two forceps are placed on the proximal side, if possible about ¾ inch apart, and the kidney cut away. A ligature is then thrown around the pedicle beneath the deeper pair of forceps. This pair of forceps is removed so that the ligature slides into the groove made by th forceps and is tied, while the pedicle itself is still safely retained in the distal forceps (Fig. 4). A second ligature can then be placed and the distal forceps removed as the knot is pulled tight. Mass ligation of this type, theoretically, is not as good as ligation of the separate vessels; but if sepsis or tuberculosis is present, direct ligation of each vessel cannot be accomplished so safely. If done blindly, the renal veins may be penetrated, and thus, if the wound has been soiled, sepsis or tuberculous infection may be carried directly into the vein. In our early experience there was one death from general septicemia and one from acute miliary tuberculosis for which I believe direct venous infection from the needle carrying the ligature was responsible.

The two-forcep method is especially applicable in nephrectomy and splenectomy. In the latter operation, care should be taken that the tail of the pancreas does not extend up into the hilum of the spleen; if so, it must be dissected out before the clamps are placed in position.

Thus far I have succeeded in using the two-forcep method on the renal pedicle. In some other situations only a single pair of forceps can be applied to a pedicle and not always satisfactorily at that, as the point of the forceps may not project far enough beyond the tissues within their bite to secure a firm hold for the ligature; or the pedicle may lie very deep so that the ligature cannot be passed beyond the point of the forceps. In such a case it is necessary to use a ligature on a needle. The needle, threaded, is passed through about one-fourth of the diameter of the pedicle. Then, with a single knot, the tissues are brought sufficiently tight under the end of the forceps to secure a good hold. The ligature is then brought around the opposite side of the pedicle and a single knot made. The forceps are slowly loosened and the ligature pulled home; both sides of the pedicle are thus drawn tight and the ligature cannot slip (Fig. 5). I learned this

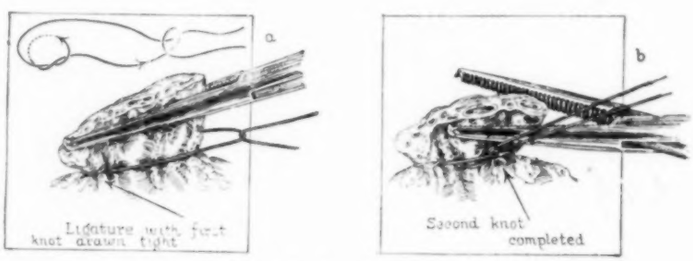

Fig. 5.—Method of ligation of pedicle (after Graser).

very useful bit of technic from Professor Graser of Erlangen.

For large tumors an anterior transperitoneal incision is to be preferred over the retroperitoneal posterior lateral, especially for malignant disease. It permits careful examination of the growth, of the liver and of the abdominal contents generally so that the patient may not be unavailingly subjected to a formidable procedure if metastatic deposits are already present. For this reason the lungs should always be roentgenographed before deciding on operation to ascertain the presence of metastasis.

4. Mayo, W. J.: The Incision for Lumbar Exposure of the Kidney, Ann. Surg., 1912, lv, 63.

In malignant renal growths, if the tumor is removable, the ureter should be located at once, divided, and the ends sterilized well below the tumor to prevent squeezing infected material into the lower portion of the ureter during the enucleation. The upper end of the ureter is dissected up to the pelvis and the renal vessels secured at their origin[1] before any attempt is made to remove the growth; otherwise, polypoid projections from the tumor, which may fill the renal veins, may be forced into the vena cava. This is an accident which necropsy findings show to be not infrequent, especially in the most common type of solid tumor of the kidney, the renal mesothelioma (Grawitzian tumor or "hypernephroma").

III. THE MANAGEMENT OF THE URETER AFTER NEPHRECTOMY FOR TUBERCULOSIS

In our experience less than 5 per cent. of the ureters in tuberculosis of the kidney require removal. These are usually cases in which a stricture exists in the lower portion of the ureter close to the bladder so that there is more or less retention on that side, a condition which obtains in a small percentage of the total number and which may be differentiated by ureteropyelography. Such ureters should be removed with the kidney at the primary operation.

If the kidney has become converted into a closed sac, the ureter will often be found to be obliterated just below the pelvis. In pure tuberculosis the ligation of such a ureter and sterilization of the stump disposes of it safely. In the "pipestem" ureters and all containing a lumen but in which there is no mixed infection, the injection of from 5 to 10 minims of a 95 per cent. solution of phenol (carbolic acid) into the ureter with ligation, insures such a ureter and the wound against further trouble. In these two types of cases the nephrectomy wound should not be drained, because of the danger of secondary infection of the ureteral stump which so often follows the drainage tract, leading to wound infection and sinus formation, to which I have called attention in a previous communication.[5]

Even if the wound be accidentally soiled with tuberculous material, it will be better to wipe it out carefully, fill with salt solution and close tightly rather than to drain, if the stump of the ureter be dropped into the wound. To put it broadly, in all tuberculous kidneys which have become closed sacs or at least have lost their function, the ureter may be sterilized and dropped into the wound and in such cases the wound should be closed without drainage.

5. Mayo, W. J.: Nephrectomy Without Drainage for Tuberculous Kidney, Surg., Gynec. and Obst., November, 1912, p. 523.

When there is secretion of urine and especially when there is a mixed infection present, if the ureter be tied and dropped into the wound it will occasionally cause wound infection and sinus formation. If the other kidney be involved, the patient may eventually die from phenomena having their origin in the infection. In these cases the stump of the ureter should be attached to the skin at the anterior extremity of the incision and should not be dropped into the wound. When so attached it permits the safe escape of discharging fluids (Fig. 6). This is especially true in recent involvement of the kidney when there is considerable functionating renal tissue. The rule should be that when the kidney removed for tuberculosis is still secreting urine, if there is any evidence of mixed infection, the better practice is to attach the stump to the skin to prevent the possibility of wound infection with tuberculosis and sepsis. In just such cases the ureter will be found enlarged and softened but not shortened or rigid.

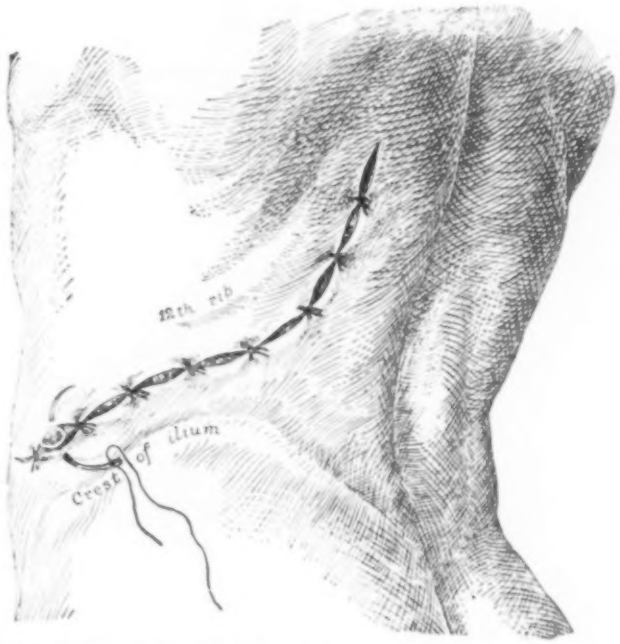

Fig. 6.—Proper incision for exposure of the kidney; ureter drawn out of anterior end of incision and sutured to skin.

Subsequently, the ureter will often discharge more or less for some days or even weeks, but in practically all the cases it will heal spontaneously. Those which fail to do so can be removed at a secondary operation very conveniently from in front and the removal is greatly facilitated by its anterior attachment. In a considerable number of cases in which we have attached the ureter to the skin there has been no pain or inconvenience from it beyond the necessity of wearing a little pad of absorbent material over it, should it discharge for a short time.

Traditions and Superstitions Regarding Health.—How many people believe that gold wedding rings rubbed on the eye will cure styes? That green apples cause colic? That earrings improve sight? That a copper wire round the waist prevents rheumatism? That only nasty medicines cure? That whisky is good for pretty nearly any ailment? That the moon affects lunatics? That tuberculosis is hereditary? That measles is inevitable? That typhoid comes from dead weeds or fish in drinking water? That red flannel (must be *red!*) is good for sore throats? That sewer gas is poison? That small-pox can be telephoned from one person to another? That mosquitoes come from decomposing leaves? That malaria is due to night-air? That robust people do not have small-pox? That scarlet-fever scales are infectious? That raw beef-steak is good for a black eye? That drinking cow's blood fresh and warm cures consumption? That the smell from a horse-stable cures consumption? That if medicine is good for sick people, it must be still better for well ones? That eating turnips makes one brave? That onions cure or prevent small-pox? That dead bodies necessarily breed a pestilence? That rusty nails produce tetanus (lock-jaw)? These and many more like myths make up the fragmentary creeds on health that we have inherited.—Minnesota Public Health Association.

PRICKLE-CELL AND BASAL-CELL SKIN CANCERS

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Although Adami[1] and certain other pathologists object to a sharp differentiation of tumors arising from the superficial epithelium into prickle-cell and basal-cell, it seems to me that the researches of Krompecher[2] and Bloodgood[3] have definitely established the fact that it is possible to draw such a line, both clinically and pathologically. In spite of the numerous publications of Bloodgood and his followers, there still exists considerable confusion as to the absolutely different form of treatment that is demanded by each type, a difference necessitated by the whole course of the cancerous process. In view of certain newer forms of treatment that are springing up, and that threaten to pay no attention to either the pathology or the clinical course of these tumors, it seems wise to restate the whole question again. The therapeutic measures to which I have reference are the Roentgen ray, radium and the various electrical processes of fulguration, desiccation, etc.

PRECANCEROUS LESIONS

It is now generally conceded that cancers do not arise from healthy skin, but that they have their origin in either actual diseased areas or in abnormalities of some kind.

The basal-cell neoplasms frequently spring from seborrheic keratoses, recently studied by Sutton;[4] from subepidermal nodules, which may be either fibromas, small sebaceous cysts, inflammatory masses in the sebaceous glands, or possibly benign epithelial growths originating in the appendages of the skin, from various other keratoses, such as those due to arsenic, or from cutaneous horns; from various overgrowths of connective tissue and epithelium, commonly but mistakenly called papillomas; and much more rarely from the lesions produced by lupus, syphilis, psoriasis and blastomycosis; and from leg ulcers or sinuses of various kinds.

On the other hand, prickle-cell cancers do not often originate from seborrheic keratoses, unless they be situated on the hands, but do arise from either arsenical or Roentgen-ray keratoses. They also arise from scars which are due to burns or to wounds which have healed by granulation, occasionally from sinuses of osteomyelitis, mastoid disease, etc.; from leg ulcers; from wens, and from various other chronic dermatoses. Bloodgood's papers[5] give a very good idea of these lesions.

Fig. 1.—Prickle-cell carcinoma, originating from a varicose ulcer of the leg. The growth is of six months' duration.

HISTOGENESIS

Petersen[6] asserts that some basal-cell growths have a multicentric origin, and that they do not arise from one cell, or from one collection of cells. A recent case under my observation has borne this out, for in serial sections there were found a number of separate and distinct places where the basal cells were assuming a malignant type. This observation is very important from the point of view of treatment, for it may explain some of the frequent recurrences that take place just beyond the edge of the scar.

On the other hand, Petersen believes that the prickle-cell or squamous-cell tumors have but a single point of origin.

LOCATION

Basal-cell cancers most frequently arise on the face, especially from the eyelids and from the nasofacial grooves, as has been so well demonstrated by Sequeira.[7] McDonagh[8] thinks that in this location there are always many displaced epithelial cells, the remnants of some glands that existed in our ancestors, and that cancer arising in them is really an atavistic phenomenon. This variety of neoplasm is also common on the skin of the face and neck, on the scalp, and more rarely on the shoulders. It is rare on the skin of the limbs and also on the various mucous surfaces, although it does form nearly 4 per cent. of all cancers of the lip.

The prickle-cell carcinomas are most common on the mucous membranes, especially of the lip; they form the vast majority of all cancers of the extremities, and may occur anywhere on the cutaneous surfaces.

APPEARANCE

In the very earliest stages, either type of tumor first manifests itself as a cutaneous or subcutaneous nodule, that speedily forms an indurated ulcer, covered by a crust. When this crust is removed there may be either serous discharge or bleeding. At this stage physical examination alone cannot tell the variety of cancer, although the history and the location will usually give more than an inkling. However, the prickle-cell neoplasms usually grow much more rapidly, and the induration is deep. The surface of a fully developed squamous-cell cancer is often more or less verrucose, while the surface of a basal-cell growth is comparatively smooth. In the typical basal-cell growths there is more or less of a rolled edge, and individual pearly nodules can often be distinguished. In addition, there may be a certain amount of spontaneous healing, as evidenced by scar formation; this never exists in prickle-cell neoplasms. In general, however, either variety may be ulcerative or fungous, according to the resistance of the underlying tissue that the cancer cells are called on to penetrate. Both kinds may invade bone and periosteum; this is not a distinguishing mark of the prickle-cell variety.

1. Adami: Principles of Pathology, New York, 1908, i, 735.
2. Krompecher: Der Basalzellenkrebs, Jena, Fischer, 1903.
3. Bloodgood: Progr. Med., December, 1904, 136.
4. Sutton, R. L.: The Symptomatology and Treatment of Seborrheic Keratoses, The Journal A. M. A., Jan. 30, 1915, p. 403.
5. Published in Progressive Medicine.
6. Petersen: Beitr. z. klin. Chir., 1902, xxxii, 543.
7. Sequeira: Brit. Jour. Dermatol., 1913, xxv, 172.
8. McDonagh: Brit. Jour. Dermatol., 1912, xxiv, 291.

METASTASES

Basal-cell growths never metastasize. I am fully aware that this statement will at once arouse opposition, but it is nevertheless true. It must be admitted, however, that a basal-cell growth can become changed into the prickle-cell variety and metastasis then result. Also, there is still a third form of cutaneous tumor, the cuboid cell, which springs from the transitional epithelium placed between the basal cells and the prickle cells of the rete. Microscopically these tumors closely resemble the basal-cell group, but metastases from them are common. These two facts explain the cases of reported metastases from the basal-cell cancers.

Fig. 2.—Basal-cell carcinoma which has spontaneously healed in the center. The pearly nodules show unusually well at the periphery.

On the other hand, the prickle-cell carcinomas nearly always metastasize to the regional lymphatics, although this may not take place until the tumor has existed for a number of years. Also the original growth may be removed and the metastases not manifest themselves until a long time has passed. It should always be borne in mind that cancer cells can lie latent for many months. As a result, one must not say that a case of cancer is permanently cured until a long time has elapsed, probably at least eight years.

PATHOLOGY

Gross.—When a prickle-cell cancer is excised and cut through, three things are to be noticed: first, that the surface is rough; second, that the infiltration is deep; third, that the cancerous alveoli radiate downward in the form of white lines, about the size of a very fine thread. In a basal-cell tumor the surface is usually comparatively smooth, the invasion less extensive, and the alveoli much smaller, in fact, often indistinguishable.

Microscopic.—When a section from a prickle-cell carcinoma is stained with hematoxylin and eosin, or with a similar combination of acid and basic dyes, it is noted that the cancerous alveoli are large, and that there is a great tendency for whorl formation to occur. These whorls are very apt to result in epithelial pearls. In addition, the individual cells are large and stain intensely with the acid dyes.

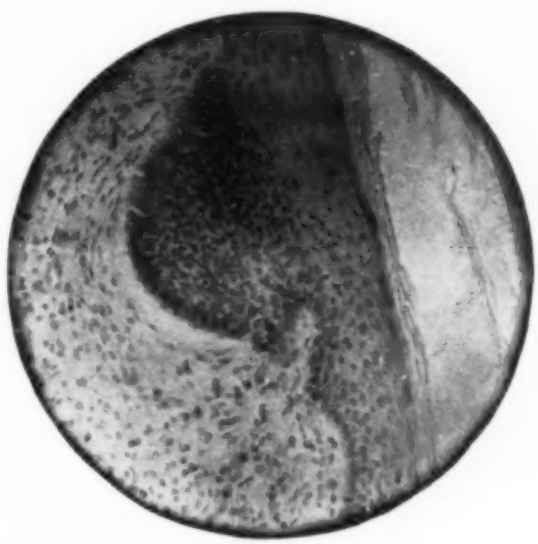

Fig. 3.—An unusually early basal-cell carcinoma, showing the point of origin very well.

In the basal-cell neoplasms, the alveoli are usually small, if the growth has existed for any length of time, and there are never any whorls or pearls present. The individual cells are small, and stain with the basic dye rather than with the acid one.

There should be little difficulty in distinguishing the two varieties, except when the cells have become separated, and are individually invading the tissues after the manner of a scirrhus carcinoma. Even then, in some fields, typical arrangements can be found.

DIAGNOSIS

In early cases it is frequently impossible to tell one variety of tumor from the other, except by the location on which it develops, and by the history of the precancerous lesion from which it sprang. Neoplasms of the skin of the face are usually of the milder type—basal-cell, while cancers of the lips, penis and limbs are almost invariably derived from the squamous portion of the epithelium. Tumors of the upper portion of the trunk are usually basal-cell, while of the lower portion the reverse is true, the dangerous ones being the more common.

As already pointed out, growths springing from ulcers, sinuses, scars, Roentgen-ray burns or keratoses, lupus and other active skin lesions are more apt to be prickle-cell, while the growths originating from seborrheic keratoses of the face, and from subepidermal nodules, are often basal-cell.

In later cases the same factors play an important part in the diagnosis, but new ones enter the field. The rapidity with which growth occurs is of great importance, for basal-cell neoplasms usually grow slowly, much more slowly than the other type. A verrucose surface points toward the cancer being prickle-cell, while a smooth surface favors the other type. The depth of the induration is also an important factor, being much greater in the more malignant neoplasms. The presence of spontaneously healed areas, or the occurrence of definite small pearly nodules at the edges, is strongly indicative of a basal-cell origin. The presence of enlargement of the regional glands does not make the diagnosis of squamous-cell cancer certain, for the glands may enlarge as the result of the absorption of inflammatory products.

Under no circumstances should a section of the growth be removed for diagnosis by a simple incision, for such a procedure leaves the blood vessels and lymphatics gaping and favors the dissemination of the cancerous process, inasmuch as malignant cells can readily enter the circulation. If it is deemed absolutely necessary to remove a bit, this should be done with the actual cautery, or with an old knife that has been flamed to a dull red heat. However, it is much better to remove the whole growth, and make the diagnosis from that. A skilful pathologist can usually

make his diagnosis from the appearance of the gross specimen.

PROGNOSIS

Basal-cell tumors are apt to last for years; they may grow so as to cover a very wide area, and kill only when they erode a large vessel, or when they invade the meninges. The patient is much more apt to die from secondary infection. On the other hand, the prickle-cell neoplasms cause metastases and thus kill directly.

TREATMENT

Three classes of growths must be considered, first those that are frankly basal-cell; second, those that are unmistakably prickle-cell, and third, those concerning which there is some doubt.

A basal-cell cancer can be permanently cured if it is completely removed locally, for metastases do not occur. This complete local removal, however, is not always a simple undertaking, for a study of the pathology will show that they frequently undercut the epidermis to a considerable extent, so that the presence of extensive involvement is not realized. Secondly, they may be multicentric in origin, so that there may be new areas in the neighborhood.

There are many ways of removing a cancer, the knife, the cautery, the curet combined with the later application of a caustic, caustic paste, the Roentgen ray, radium, fulguration, desiccation, etc.

When one searches the literature for reports of late results in a long series of cases, he is forced to the conclusion that surgery yields the best results, for those practicing the other methods have not shown what they can permanently accomplish. Of course there are one or two individual exceptions, but as a general proposition this statement must hold.

In the surgical pathologic department of the Johns Hopkins Hospital, it has been found that nearly 50 per cent. of the patients who are suffering from late cancer give a history of early treatment with caustic pastes, and that many more have had Roentgen-ray treatment, etc.

Fig. 4.—The later development of a basal-cell cancer. In this case superficial healing had been produced by the Roentgen ray, but the cancer was spreading beneath normal epithelium.

Fig. 5.—A typical section from a prickle-cell cancer. Notice the whorl formation.

The Roentgen ray has probably failed because too soft a tube was employed, a tube that did not give off rays of sufficient penetration. It is well known that such treatment can cause healing to take place on the surface, while in the depths the cancer spreads merrily. It is extremely doubtful if radium will accomplish any more than the properly used Roentgen ray. This form of treatment, however, should be applied in one or two massive doses, as advocated by MacKee[9] of New York, and not in a series of small exposures as is usually done. I have had some excellent results with one heavy, measured dose. At present it seems to me that the Roentgen ray should be reserved for the inoperable cases, and for those growths whose removal would cause great deformity, as when located on the eyelid or ear. I believe that all other growths should be either removed with the actual cautery, or with the knife, followed by the cauterizing of the edges.

Inasmuch as the prickle-cell carcinomas metastasize to the regional glands, the problem is similar to that encountered in cancer of the breast or lips. The ideal operation is a block one, in which the cancer with its underlying fat, fascia and muscle, the lymph vessels and the glands are removed in one piece. In some instances this is perfectly possible and should always be done. In other cases, as when the growth is situated on the nose and scalp, such an operation is impossible and can only be approximated. In this connection it will be recalled that the operation for cancer of the lip is a successful one, except in the very late cases. Here the cancer is removed in one piece and the glands in another, and yet recurrence practically never takes place in the small strip of lymph-bearing tissue that connects the two. Likewise in cancer of the hand or foot, growth takes place only at the original site, and in the draining glands. Hence it is fairly safe to remove both the tumor and the glands, leaving the connecting lymphatics undisturbed. If recurrence should take place in them, removal is possi-

9. MacKee: New York Med. Jour., March 29, 1913.

ble. If the glands are left undisturbed, cancer cells may pass through them, and form internal metastatic growths. In other words, by removing the glands we have a fairly sure way of limiting the growth.

In dealing with the uncertain cases we should always bear in mind that the first essential is to make an accurate diagnosis; hence, for the removal of such growths, a measure should be adopted that will permit of their safe recognition. This means that only the knife or actual cautery should be employed. In order to do the best work, these tumors should be diagnosed at once. A trained pathologist can usually do this satisfactorily by means of a careful examination of the gross specimen, but in many cases a frozen section should be made at once, and if the growth is of the prickle-cell type, the glands removed at the same sitting. In dealing with the very early cancers, growths that have not existed for more than a month, it is probable that local operation alone will suffice.

THE CLASSIFICATION OF MEDICAL SCHOOLS *

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The desire to classify seems to be a universal human motive. In education, in politics, in society, men reach out for some form of classification that shall be definite and specific, so that every cause may have its right label, every party its true name, and every institution be included in its proper class.

Institutions as they develop become more complex, and hence more difficult to divide into classes. These difficulties increase as one seeks to take into account intellectual and moral qualities. For this reason it has been almost impossible to classify colleges. It would be easy enough, indeed, to separate colleges into groups according to some simple condition, for example, those having more than five hundred students, or more than a million dollars endowment, or those teaching Hebrew; but such groupings would have little significance. The moment one takes into account intellectual qualities and educational facilities, the groups fade into each other by imperceptible gradations so as to wipe out the lines of demarcation.

The classification of medical schools does not present quite the same difficulties. There are certain criteria that may be applied to them, or, indeed, to technical and professional schools of any sort, which are more definite and easier to appraise than is the case with colleges.

Before any suggestions can be offered, it is necessary to present some review of the work of the Council on Medical Education of the American Medical Association, which has for some years been engaged in just this effort. Moreover, it has achieved notable results in the improvement of medical education in the United States. It has done more than any other agency could have done to weed out unfit medical schools, encourage full-time professors in the scientific branches, to demand bedside clinical teaching, and insist on adequate laboratory and hospital facilities.

This the Council has been able to do not only on account of the hard work of its chairman and members, but also because it represents the medical profession in America. Over half the practitioners of the country are members of the local medical societies. These choose delegates to the state societies, and the latter in turn choose the House of Delegates, a body of approximately one hundred and fifty. The Council on Medical Education is a committee of this body, and its action has all the weight of the entire medical profession. Universities, colleges and state boards have accepted the decision of the Council as the expression of the thought of the leaders of the profession in America.

Under these conditions the reorganization of medical teaching has advanced very rapidly, and the classifications of the Council have now become sufficiently differentiated to make some examination of the present situation desirable to all interested in medicine and in medical education.

As a layman in medicine I venture to make such a review because the Council is primarily a council on education, not on medicine. It is in effect a national agency in education, and its work touches the secondary school, the college, the university, no less directly than the medical school. It has dealt quite as much with the education which precedes the medical school as with that given in it. It is impossible, indeed, to legislate on medical education without becoming immediately involved in the entire educational problem.

From the standpoint of education I have not found myself in agreement with all of the work the Council has done, admirable as it is. For example, I cannot make myself believe that to begin three sciences and a modern language in one year will make toward sound education and training. I am sure that this recommendation will in the end be only a step toward a more wholesome effort to present medical candidates who are at the same time fairly educated and who are grounded in the elements of these sciences.

For similar reasons I look on the enforcement of this provision over the whole United States as premature. In the South the medical schools were barely on the high school basis, and I fear the effect of this action both on medical school and on high school. It will, I fear, work to continue for some years a series of insincere adjustments; and the progress made in the raising of standards, while attractive on paper, is liable to be in part illusory.

One feature of this effort for which the Council is not responsible is the submedical school teaching elementary science and modern languages. For these parasites on our educational system there is no excuse.

If the colleges are not doing rightly the work of premedical education, the remedy is to turn back unprepared students to them and to see that their work is well done. The remedy does not lie in having the medical school take over the work of the college. The real purpose of these schools is to get students. To be consistent, the medical board which goes into this effort should add a preparatory school as well. The intake would be larger. One can forgive in a measure the resort to this device in the case of a detached medical school, living on fees and with starvation ahead as a result of the new entrance conditions; but for a university to maintain, in addition to its own schools, such an extramural device for catching students seems unworthy of a university.

* Read at the joint meeting of the Association of American Medical Colleges and the Federation of State Medical Boards, Chicago, Feb. 17, 1915. The full discussion of this paper appears under Society Proceedings, this issue.

These questions, while directly related to the educational work of the Council are, however, aside from the subject of this paper. I turn now to the matter of classification.

THE COUNCIL'S CRITERIA

To classify medical colleges, certain criteria must be assumed. The Council grades medical schools on a scale of 1,000, using ten criteria, each having a weight of 100.

The criteria chosen by the Council are:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, granting of advanced standing, and the character of records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, necropsies, specialties.
8. Faculty, number and quality of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

In order to make use of definite objective criteria in estimating a medical school, these tests must have two merits:

1. They must constitute true tests of the qualities of the school.
2. They must be capable of practical application in the hands of competent judges.

It seems to me that these ten criteria leave much to be desired, in respect both to significance and to practicability. Nor can they be considered comparable one with another in importance.

The showing of graduates before state boards, for example, is a test easily and definitely applied, but it is one which will vary with each state, and with the character and strictness of the examinations. Nor can it be compared in importance with good laboratories and good hospital facilities. It is a fact that in some states a candidate could, by a good use of cram books provided by a diligent faculty, pass with flying colors through the state board examinations, although he would be helpless in the presence of a patient.

A very interesting proposition was once made to the Carnegie Foundation by a young college man out of a job, who offered for a certain money consideration to pass with credit the state board examination in a given state without ever attending a clinic or knowing anything about medical practice. The proposition was not accepted, but it had interesting possibilities.

Criterion 2, as adopted by the Council, is definite, fundamental, and capable of practical application. It says in effect that one test of a medical school is the qualifications of the candidates it accepts. The practical test of this is a reasonable entrance requirement, honestly and sincerely enforced. To ascertain the validity of this test, however, it is necessary to carry out an inspection of these entrance requirements and their enforcement by men thoroughly familiar with the work of colleges and high schools.

Similar difficulties are evident in other criteria; such, for example, as No. 9, which undertakes to estimate the percentage of commercial spirit in the medical school. Such a criterion is in the first place incapable of practical application. To mark a school 50 per cent. commercial and then average this up with other higher percentages would seem a sort of *reductio ad absurdum*. Such a school has no place among good schools at all. Criterion 10 relating to the use of libraries is somewhat indefinite. These have their use in stimulating the acquirement of a good working library, although it may be doubted whether a library acquired under such pressure would be used. In any case it would be better to make the possession of a library a mark of good standing rather than to make its presence count in the same proportion as the possession of a competent faculty.

In general, it may be said that these criteria are too many, are not comparable one with another, and are not in all cases capable of practical application.

It is also fair to say that the application of such objective tests as these would require a staff of several experts. This would doubtless be true of any tests which could be devised. Thus the man who passes on entrance requirements ought to be an expert in education. He must know colleges and schools as only a teacher can know them. But such a man is quite unlikely to be qualified to pass on the pathologic laboratory. Similarly the expert who can pass on the laboratory might be quite unable to estimate the quality of the clinical teaching.

RESULTS OF THE COUNCIL'S CLASSIFICATION

Let us now turn to the results of the classification of the Council. When it began its work there were about 160 schools; to-day there are approximately 100, and this result speaks volumes for the work of the Council, whether one agrees with all its decisions or not. No better service than this has been done by any group of men laboring for the cause of education.

The third classification, revised June 21, 1914, divides the 109 medical schools then existing in the United States into four classes. According to this grouping, there are twenty-nine first-class medical schools, thirty-eight second-class, twenty-two third-class, and twenty fourth-class schools. One acquainted with these schools has only to examine these classes, or, more properly speaking, these groups, in order to perceive that this classification has now become almost meaningless. For example, the first class, or group, includes not only the strong medical schools with large endowment, complete clinical facilities, and research departments, like those of Harvard, Johns Hopkins, Columbia, Cornell, Washington University and others, but it takes in also institutions like Vanderbilt, Tulane and Texas, whose standards and facilities are of an entirely different order. To place the latter schools in the same class with the strongest in the country, and perhaps the strongest schools of the world, is good-natured prophecy, not educational justice.

But this is not all. Class A plus has been stretched to include schools of the type of the College of Medicine at Omaha, and the Starling-Ohio School at Columbus, since known as the School of Medicine of the Ohio State University. To group these schools in the same class as Harvard, Johns Hopkins and Washington University is to wipe out real distinctions.

The second class of schools, those grouped under Class A, show similar discrepancies. It would be difficult to defend on educational or medical grounds the wide variety of schools included under this group. Some of them are promising efforts under university direction, reaching toward good ideals and sound support. A considerable proportion are schools controlled by groups of practitioners and living entirely on the fees of students. To raise the standard of the entrance requirements, as the Council has done, makes it impossible for any medical school to live from fees and do sincere medical teaching. One cannot go through this list without realizing that however honestly and carefully it has been made, it contains an incongruous assortment of institutions which have no particular reason for being grouped into a class by themselves. One recognizes further that between the poorest third of the first class and the best third of the second class there is no appreciable difference. Finally, it is clear that a strong current exists which will ultimately tend to carry all these schools into Class A plus.

The succeeding classes (B and C) show similar incongruities. The schools differ from each other by imperceptible gradations, and their differentiation into distinct classes rests on distinctions which become every day more insecure. It shocks our sense of proportion to have Johns Hopkins classified with the Starling-Ohio, since become the colleague of a second school—a school of sectarian medicine—taken over by the same university. To class together such widely separated schools is liable to do harm rather than good. Some more permanent means of classification must be found if this classification is to endure.

Can medical schools, any more than colleges, be classified into sharply divided classes? This question lies at the root of the whole matter.

In reply I would say that in my judgment no body is so well prepared to carry out such work as a body which represents the medical profession. Reform in medical teaching, like all other reform which is genuine, will come from within, not from without. No other group of men, in my judgment, could hope to do what the Council on Medical Education has accomplished. I believe, as I have already said, that the Council has suffered in its work by a lack of touch with the educational conditions with which it has been dealing. It can, I believe, improve its future legislation by availing itself of a closer knowledge of schools and colleges; but I question whether any group of men, however qualified, can make a hard-and-fast classification of medical schools which would not be open to serious criticism. In other words, the problem of classifying schools into four or five groups on such criteria as the Council has assumed seems to me practically insoluble. It has served its day and some looser form of grouping seems now desirable.

SUGGESTIONS FOR AN IMPROVED CLASSIFICATION

In order to make an improvement in the present classification, one must go back to the criteria which are adopted for estimating a medical school. There are certain things about a medical school which are fundamental and yet definite and specific, and which may fairly be appraised by those who have the necessary knowledge and experience and who take the necessary time. The feasibility of any truthful classification rests absolutely on having criteria that shall be at once significant and capable of application. These are few in number. They seem to me to be embraced under the following heads:

1. The first test of any school, whether it be a school of general education or for a profession, is the quality of material which it accepts; or, to put it in another way, the state of preparation at which it admits its students. An entrance requirement reasonable and fair to the school system and honestly enforced is one definite criterion for the judgment of any teaching institution. This criterion, however, is of value only when it is administered by men familiar with the school systems and the colleges.

2. It is not enough to receive into a medical school well-prepared candidates. Experience has shown that students received at the high school level develop into better practitioners of medicine than those who enter with a more advanced education but are taught by teachers who are either incompetent or who have given only the fag ends of their time from practice. In other words, the quality of the teaching, the ability and devotion of the faculty, must be taken into account in estimating the fitness of a school of medicine for training physicians.

Furthermore, let us not forget in our zeal for research that the principal function of the medical school is the training of medical practitioners. To sacrifice their interests to the preparation of a few men for research is not to be thought of. Both ends can be attained by the use of a wise discretion.

These practitioners of the future enter the medical school as youths of from 20 to 23. Their value to the body politic as physicians will depend as much on the character of their teachers as on their skill. I venture to say that every successful physician as he looks back toward the causes of his success will recall one or two of his medical teachers who helped him into the right path full as much by their human and moral qualities as by their professional skill. The value of a physician to any community is just about equal to his medical skill multiplied into his moral character. Therefore above buildings, above state examinations, above even laboratories and hospitals, I would place the character and the ability of the faculty, including the clinical professors, for they furnish the ideals of the young practitioner. It is the character of the teachers which determines whether the medical student fits himself for the business of medicine or the profession of medicine.

For another reason it seems to me desirable to lay at this time stress on the matter of teaching. The student loses time in both high school and college by reason of lack of teaching skill on the part of his teachers; but there is no other teaching institution in which the art of teaching is so little considered as in the medical school. A man is chosen because he is a good pathologist, a skilful anatomist, a well-known surgeon; but the question whether he can teach is seldom raised, nor is there any oversight in the medical school for improving the teaching or for the elimination of ineffective teachers. The good teacher comes by accident. Nowhere is there a greater chance to save time for the medical student than by improving the teaching in the medical school itself.

These two criteria—the basis of selection of the student body and the basis of selection of the teaching body—outweight all other considerations.

It is true that this estimate involves a wide exercise of personal judgment. To say what constitutes a good teacher is one of the most difficult tasks. Never-

theless, the quality of the teaching is a fundamental fact in the school which cannot be escaped. Some judgment of it must be attempted, if any estimate of the school is to be made.

It is far sounder educationally to place large weight on the quality of the teaching rather than on a specified curriculum. After all, we do not wish to make these medical schools absolutely alike. A certain elasticity of institutional development should be left. Courses of study will under any circumstances follow a general plan. Too sharp insistence on the details of the courses would seem to make against their educational freedom, which is desirable. Beside these two criteria whose determination involves the evaluation of certain educational and moral qualities, I would add three others which are definite, precise and which admit of accurate application:

3. The completeness and availability of the scientific laboratories in chemistry, anatomy, physiology, pathology and associated sciences form a definite and practical criterion for estimating the value of a medical school.

4. Similarly, the character of the clinical facilities, including both hospital and dispensary and the use which is made of them, form a concrete and a usable test of the character of the school.

5. These four qualities of a good school—soundly administered entrance requirements, an able and devoted faculty, complete scientific laboratories, modern clinical facilities both in the hospital and in the dispensary—can be obtained only by the expenditure of money. Below a certain minimum of expense it cannot be honestly done. A school that pretends to do these things with a wholly inadequate income stands self-revealed. To provide them from the fees of students, under the conditions now accepted by medical schools, is impossible. In other words, a concise, detailed statement of the receipts and expenditures of the medical school throws a great light on the relation of its professions to its performance. It affords the most practical means of showing how far performance keeps pace with promise. A prospective medical student who knew how much money was spent on the departments of pathology, or internal medicine, or obstetrics, would get a better insight as to whether the medical school could carry out the promises of its catalogue than he could from any other source. If he knew that the department of pathology was run on $1,800 a year—including the salary of the professor—he would know more about what sort of education he was likely to receive than could be gleaned from whole pages in the catalogues.

Perhaps there is no other one thing in which the medical schools, and particularly those which are on the border line, are more tender than over the request to make an exhibit of their finances. The request to furnish this generally brings forth an eloquent oration on the thesis that the work of a medical school must not be measured by the money put into it, that no one can reckon in dollars the devotion of the medical practitioners of the country, and that to place their service on a commercial basis is an insult to the profession. No one would depreciate the devotion and self-sacrifice which American physicians and surgeons have put into medical schools. No one who knows anything about the subject, however, will fail to recognize that their presence on a medical faculty is in many cases a matter of business as well as of devotion. Any man who knows what the transformation of our medical schools means understands that the modern medical school cannot be maintained on the kind of teaching that sufficed for the medical school of ten or fifteen years ago. The time is here when the clinical professor must give not a mere fraction of his time to the medical school and the hospital, but this must constitute his primary work, to which his practice is secondary. Under these circumstances the medical school which professes to give a modern education with a totally inadequate income is offering something which it cannot furnish; and the prospective student has a right to this sort of information.

I repeat, therefore, that an honest detailed statement of the receipts and expenditures of a medical school forms one of the most sure and just tests for judging the work of the school and the relation of its promise to its performance. Most medical schools prefer to be virtuous when they can afford it.

Assuming that these criteria are reasonable and practical, do they form a means for accurate classification? In other words, can some grouping of existing medical schools be made on these criteria which will be educationally just, which would be helpful in the development of the schools themselves, and for medical education? For after all it is this last consideration which ought to govern our judgment. No classification is worth while unless it makes in the end for the betterment of medical education. And those who have watched the classifying process have been aware of a somewhat disquieting tendency among the medical schools to get into Class A or Class A plus without much regard as to whether they were better places for education or not.

A hard and fast differentiation into four or five distinct classes is, I believe, almost impossible, and its ultimate effect doubtful.

From such thought as I have given the matter, I am inclined to think that one in the possession of the information called for under these five heads could make some such grouping as the following:

There is a group of institutions of the highest class, which in respect to all these tests stand by themselves. They constitute a group apart and include those institutions of large resources and endowment, of high standards and of large clinical facilities, which are clearly able to offer the best modern education. No two persons qualified to judge will differ greatly concerning them.

It would also be feasible to designate a list at the bottom of the medical schools made up of institutions which are weak, which are involved in commercial medicine, which live only by flagrant evasion of all reasonable standards, and which ought not to be recommended to students. This group of institutions should be omitted altogether from any list to be recognized by the American Medical Association. To a certain extent a school considers itself recommended to the public even when it appears in Class C.

There would then remain a group of medical schools secondary to the strong and well-endowed schools, but which are able nevertheless to give a fair medical education along modern lines. They are the places to which a student would go knowing he might not get the best opportunities which the country afforded, but that he was receiving a decent modern education in medicine. Such a group would undoubtedly contain institutions of a wide variety of excellence, but great light would be thrown on their relative standing by a publication of the details on which

the grouping was effected. Promotion should be made only when it had been clearly attained, and the basis on which it was accorded should be made public. In all these matters publicity is wholesome alike for the medical school and for the agency which seeks to appraise it in comparison with others. The indefiniteness of the Council's descriptions of these classes has been one great source of difficulty. To call a group of schools "satisfactory" is not enough. The grounds of the decision also ought to be made known. This means carefully chosen criteria, a body of three or four experts (not necessarily employed all the time but in thorough cooperation), examinations of a detailed and careful nature, and finally full publicity. I hope the Council which has so brilliantly done the work of the past ten years may have the means to undertake this sort of examination.

CONCLUSION

Let me say one word in regard to such criticism as I have made of the Council on Medical Education. I have spoken concerning the work of the Council with great frankness for the reason that no other course is worth following, and in the belief that progress comes only by the frank and honest expression of opinion in regard to such matters. I have such high regard for the work of the Council, and for the work of its chairman, that I take a keen interest in the preservation and development of the Council's work—a work which seems to me liable to fall from its own weight if the classification proceeds along the present lines. I hope, as a layman in medicine, that it is not impertinent of me to discuss these matters, since they are primarily questions of education; and I hope also that it may be admitted that the sincerest service a friend can perform with respect to the work of the Council is to speak in a critical, and yet in a friendly way concerning those directions in which, it seems to him, the dangers lie. The interests of education in our nation are one. Education itself is one thing, from elementary school to university; and medical education in its largest and truest sense can be approached wisely only when one keeps this fact in view and regards medical education in its true perspective as a part of the whole problem of education of the American nation.

PATHOLOGY OF OROYA FEVER

THIRD REPORT *

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PREVIOUS INVESTIGATIONS

We have not been able to find in the literature any accurate and complete description of the pathologic anatomic lesions of Oroya fever. Evidently but very few careful and complete necropsies have been performed in those regions in which the disease occurs endemically. Moreover, the disease often has been confused with other diseases which occur in these localities. Both of these facts tend to explain the absence in the literature of complete and accurate descriptions of the lesions which occur in Oroya fever. In the estimable monograph of Professor Odriozola,[1] we find the most complete account of the gross lesions, and Scheube,[2] Plehn[3] and Castellani[4] also very briefly refer to the pathologic anatomy of the disease.

Odriozola, writing on this subject, states that the lesions which are observed at necropsy are relatively slight when compared with the gravity of the disease. The most noticeable feature is the profound anemia. All of the tissues and organs are very pale. Nevertheless, local complications of a congestive or inflammatory nature are not rare, and it is frequent to see foci of congestion or inflammation in the lungs, especially at the bases. Sometimes there is congestion of the intestinal mucosa and a true enteritis. The blood is very liquid, coagulates very slowly, and is blackish in color. The pericardium contains a variable quantity of serous fluid. The cavities of the heart are empty, and one may find fibrinous clots adherent to the walls and extending into the larger vessels. The liver and spleen are frequently congested, the liver sometimes attaining a volume suggesting hepatic suppuration. The spleen can likewise be increased in size so that it extends almost to the iliac fossa and can suggest paludal cachexia. In this case it is surprising to see this organ become rapidly reduced in size at the time the eruption appears. The congestion of the spleen and liver, however, is not constant. Sometimes the spleen is normal or even reduced in size. The congestion of the liver is, however, more constant than that of the spleen. The lymphatic glands are all swollen and congested, and this hypertrophy surpasses that observed in common anemia. The mesenteric glands reach a volume comparable to that found in tuberculosis or in leukocythemia. He regards the enlargement of the lymphatic glands as an excellent diagnostic sign, very valuable in accessible regions, such as the cervical, the subclavicular, the carotid, axillary and inguinal regions.

Tamayo[5] has reported on twenty-six cases of Carrion's disease, eight of which were fatal. Necropsies were performed upon five. Almost nothing regarding the pathologic conditions observed occurs in the report. It is stated that in three of the cases nothing special was found at the necropsy. In the other two cases the necropsy findings are reported as negative with the exception of the fact that the spleen and liver were enlarged. In one of the cases it is reported that a few verrugas were found on the spleen when there had been no eruption on the skin during life. Nevertheless, the blood counts made on these patients during life all showed very advanced anemia, so that some pathologic changes must have been visible at the necropsies. No report on the condition of the intestines or other organs is given.

Through the kindness of Dr. Hercelles, professor of pathology in Lima, we had the opportunity of examining the pathologic material relating to Oroya fever and verruga peruviana in the museum and laboratory at the Dos de Mayo Hospital. In Dr. Hercelles' opinion, the most striking lesions of Oroya fever (cases of verruga peruviana without the eruption, as he designated them) are the infarctions in the spleen which occur very commonly. Infarctions in the liver he has also observed.

PRESENT INVESTIGATIONS

Our ideas regarding the pathology of Oroya fever, which follow, are based upon the study of organs and

* From the Harvard School of Tropical Medicine.

1. Odriozola: La maladie de Carrion ou la verruga péruvienne, Paris, 1898, p. 98, Carre and Naud, editors.
2. Scheube: Die Krankheiten der warmen Länder, Jena, 1903, 416.
3. Plehn: Mense, Handbuch der Tropenkrankheiten, Leipzig, 1905, Ed. 1, ii, 438.
4. Castellani: Castellani and Chalmers, Manual of Tropical Medicine, London, 1913, Ed. 2, p. 1201.
5. Tamayo: Crón. méd., Lima, 1905, xxii, Nos. 406, 407.

tissues collected by ourselves, but the material observed and received from this institute and from other Peruvian physicians has also been considered in our discussion of this subject. The latter material, however, will be referred to more particularly in a report dealing with the pathology of verruga peruviana.

In our opinion, the most striking feature observed at necropsy of patients who have died with Oroya fever is the evidence of an advanced anemia. The skin shows marked pallor and is usually of a pale, yellowish, waxy color. There is no eruption on the skin in uncomplicated cases. The conjunctivae and finger tips are also pale. Diffuse and punctate hemorrhages may occur in the conjunctiva and in the mucosa of the nose or mouth. The superficial lymphatic glands are usually moderately enlarged, of firm consistence, and on section of a pale pink color. Frequently they are edematous. There is almost always considerable emaciation, and the subcutaneous fat is scanty. Small punctate hemorrhages are often observed in this tissue. A few petechial hemorrhages may occur in the epicardium, viscera, pleura and fat elsewhere in the body. These are not extensive, however. There is a tendency to moderate edema in many of the tissues. The heart usually contains partially fluid, pale red blood. The myocardium is often flabby; a few small discrete ecchymoses may be present in the pericardium. The lungs are usually pale. They sometimes show some congestion; more commonly, however, edema at the base. A few petechiae are often observed beneath the pleurae, and a small amount of pleural effusion is common. The spleen is usually enlarged and of firm consistence. The follicles are not swollen, and are sometimes indistinct. Infarctions are common. The liver is frequently somewhat swollen. Its consistence is flabby, and the cut section often shows yellowish mottling and sometimes areas in which necrosis and fatty degeneration are perceptible. The mesenteric lymphatic glands are swollen, and on section either pale pink or somewhat reddened in color. The follicles of the small intestine may be swollen, but in other cases they may be normal in appearance. Superficial ulcerations have been found in the large intestine. Probably lesions of this nature develop only late in the course of the disease and are secondary in character. The bone marrow is usually distinctly softer than normal, and the surface sometimes shows a grayish-red mottling.

HISTOPATHOLOGY

We have also been unable to find any accurate report of the histologic changes occurring in Oroya fever, or, indeed, any account of the specific lesions we have observed in the microscopic study of the tissues of persons dying from this disease. Nevertheless, in tissues presented to us in Lima from Oroya fever cases (designated as verruga cases in which there was no eruption on the skin), we have sometimes found the same lesions we have observed in the tissues collected at necropsy by ourselves. The tendency, by many Peruvian physicians at least, has been to regard the case coming to necropsy with no lesions of verruga either on the skin or internally, as one of mistaken diagnosis, or as one of verruga peruviana in which death has occurred before the nodular lesions have appeared. The interest in Peru has appeared almost always to center on the histology of the verrugas. In the histologic study of the tissues from persons dying from Oroya fever, we have found marked changes in the liver, spleen, bone marrow and lymphatic glands.

The *liver* shows areas of toxic degeneration which have apparently resulted from the activity of the parasite *Bartonella bacilliformis*, and this fact would suggest that during the course of the disease, in addition to the destruction of the red cells by the parasites developing in them, another pathologic process results from the presence of a toxin in the circulating blood. The action of such a toxin seems to be revealed in the liver by the presence of extensive areas of necrosis of the central type, beginning about the hepatic veins. In these areas, many of the liver cells in sections hardened in Zenker's solution show numerous vacuoles in their cytoplasm which suggest spaces formerly occupied by fat, and in tissues hardened in liquor formaldehydi frozen when cut and stained with scharlach roth the characteristic stain for fat is obtained in these areas. Distinct zones of these cells containing fat droplets surround central areas of more marked necrosis in which many of the liver cells are very granular. Other liver cells about these areas appear homogeneous and hyaline, and stain intensely with eosin. Much granular material is present in the sinusoids, and numerous endothelial phagocytes frequently containing erythrocytes, erythroblasts and polymorphonuclear leukocytes are present in the periphery of the necrotic areas between the liver cells. While there is not extensive pigmentation of the liver, moderate amounts of pigment in granules or small masses may be seen within the endothelial phagocytes and in a few endothelial cells lining the sinusoids. Occasionally small granules of pigment may be seen in the liver cells. Most of this pigment does not give the iron reaction; it is yellowish or brownish, and not black. Crystals of hematoidin are also present.

The *spleen* shows numerous infarctions. In sections, the edges of the infarcted areas are much congested and show leukocytes migrating into the necrotic tissue. Many of the veins show thrombosis suggesting endothelial injury from some toxic or infectious agent. At the periphery of many of the splenic nodules just outside the capsule, areas of necrosis are visible in which there is marked deposition of fibrin. There is a large amount of pigment in the spleen, which occurs in small or larger masses and also in fine granules. It is yellowish or yellowish-brown, and is present in both the endothelial leukocytes and also free in masses between the splenic cells. The pigment is not black, and does not resemble black malarial pigment. It resembles melanin in that it does not give the iron reaction. Whether or not in Oroya fever the anemia partially results from the destruction of the red blood cells through the circulation of hematin, as W. H. Brown[6] believes to be the case in malaria, at present is not clear. *Bartonella bacilliformis* evidently produces no pigmentation in its development in the red cells in the peripheral circulation. No malarial parasites are visible in the splenic sections in uncomplicated cases. The spleen is rich in pulp and much congested; many nucleated red blood corpuscles are visible. Endothelial phagocytes frequently containing red blood cells are also present in abundance. Other large swollen endothelial cells are observed containing rounded and rod-shaped bodies. These will be described presently in detail.

In the *bone marrow* there is also striking evidence of phagocytosis by endothelial leukocytes of the red corpuscles in various stages of development, and of

6. Brown, W. H.: Jour. Exper. Med., 1913, xviii, 96.

polymorphonuclear leukocytes as well as increased production of normoblasts. It seems probable that this extensive phagocytosis, which is evident in the liver, spleen, and bone marrow, is also an indication of the action of a toxic substance which has led to chemical changes or injury to the engulfed cells.

In the *lymphatic glands* the most striking pathologic picture, which at once attracts the attention and which has already been referred to in the spleen, is the presence of large, swollen, endothelial cells, sometimes free in the lumen of the blood vessels, at other times still attached to the walls. In some instances a single endothelial cell is so swollen that it will almost occlude the entire lumen of the vessel. These cells are in various stages of degeneration. Many of them are distended with rounded and rod-shaped elements and it is apparent that a multiplicative phase in the development of the parasite *Bartonella bacilliformis* takes place within these cells. These changes are, however, much more clearly observed in smear preparations made from the lymphatic glands and stained by Giemsa's method. In such preparations a number of the endothelial cells contain rounded bodies with bluish cytoplasm and small granules of chromatin. In some of the cells but a single body is present; in others, two, four or many may be observed. Sometimes the cell is distended with rounded masses or spheres each containing a definite number of minute points of chromatin. These spheres are of rather uniform size.

The large intestine shows ulcerations with distinct undermining of the mucosa at the edges, so that frequently the lesion has the appearance of a small abscess cavity lying in the submucosa. There is a more or less distinct line of demarcation of the abscess with vascular granulation tissue forming the wall; numerous polymorphonuclear leukocytes, fibrin, necrotic tissue and bacteria are present. In some areas, coagulation necrosis is marked. No amebas or other animal parasites are visible, nor does the ulcer show anything histologically characteristic of any other disease. The blood vessels in the vicinity of the lesions show endothelial cells distended with the rounded and rod-shaped parasites already described. These are also found elsewhere in the blood vessels of the submucosa in small numbers, and in the lymphoid tissue of the submucosa they are present in large numbers, where they sometimes appear to obstruct the blood vessels. It appears probable that this may be the primary factor in the production of the ulcerations, and that they are brought about in a somewhat similar manner to the ulcerations of the intestine sometimes produced by *Leishmania donovani* in kala-azar infection.

From a study of other cells it would appear that these spheres break up into a large number of minute elements, each of which contains a chromatin granule; these become elongated, and finally appear as distinct rods containing at one end a minute particle of chromatin. The latter appearance is particularly apparent when the sphere is ruptured and the rods set free. If these rod-shaped elements, which have been set free by the rupture of the endothelial cells, are compared with the rods found within red blood-corpuscles lying near, it is seen that they are identical in character. Moreover, they are entirely similar to the forms already observed in the blood-cells in the peripheral circulation. It seems very probable that the rods which have escaped from the spheres constitute microgametocytes, rather than merozoites, which have subsequently entered the erythrocytes, and the movements of the parasites observed in the red blood corpuscles in fresh preparations, and already referred to in previous reports, coincide with this idea. Thus the appearances observed in the endothelial cells of the lymphatic glands from Oroya fever cases resemble considerably those described and pictured by Gonder[7] in his description of the life cycle of *Lympho-haematocytozoön parvum*, formerly *Theileria parvum*. Through the kindness of Dr. K. F. Meyer, one of us recently received microscopic preparations of this organism, and from a study of these preparations and the articles by Dr. Meyer[8] and Dr. Gonder on this subject, the similarity between the organism observed by us in the endothelial cells in Oroya fever and *Lympho-haematocytozoön parvum* is further suggested. Owing to the more minute size of *Bartonella bacilliformis*, particularly in the multiplicativ phase, the life cycle within the endothelial cells is much more difficult to observe and interpret. From these observations, however, it appears that *Bartonella bacilliformis* should be classified as a protozoon and that it is related to the Lympho-haematocytozoa, a genus recently created by Meyer. Further observations on a larger amount of material are, however, desirable.

We have said that we have been unable to find any accurate account of the histopathology of uncomplicated Oroya fever cases in the literature. In an instance in which sections of the spleen were sent to Bindo de Vecchi,[9] somewhat similar lesions were evidently encountered by him.

> In de Vecchi's case there were no nodules on the skin. Neither the clinical history nor the necropsy made mention of such a condition. The hemorrhagic lesions of the spleen were very striking. These began in the follicles and finally destroyed them. The liver was so markedly changed that the tissue could hardly be recognized. The sections showed so-called "dissociation of the lobules" to such a degree that the characteristics of the cells were no longer present, but they were massed together. Single cells showed different lesions of degeneration and sometimes necrosis of the cell. Also different liver cells showed in their protoplasm either single or multiple inclusions of round bodies that stained deeply with a basic stain, with a ring about them, and were often accompanied by precipitated pigment. In the markedly changed tissue there were also found small recent hemorrhages and a rich infiltration of leukocytes. The endothelial cells were swollen or desquamated, and some of them had assumed the function of phagocytes. De Vecchi believed that the inclusions of protoplasm in the liver cells were to be regarded in all probability as the remains of nuclei from leukocytes, and they were to be explained through the phagocytic function taken over by the liver cells as occurs in the severe degenerative lesions of the liver, and particularly in acute yellow atrophy.

The tissues on which these descriptions of de Vecchi are based, however, were sent to him from Peru, and he had been informed that the patient from whom they came had died of severe Carrion's fever. It was stated that no verrugas of the skin or internal organs were observed at the necropsy. However, it was also stated that a paratyphoid bacillus had been isolated from the spleen. Possibly the organism encountered in this case was a species of paracolon or colon bacillus, and a terminal invader in a case of Oroya fever. In the light of our own observations, the changes described in the sections of the liver by de Vecchi suggest such a possibility.

7. Gonder: Jour. Path. and Therap., 1910, xxiii, 328.
8. Meyer, K. F.: Kolle and Wassermann, Handbuch d. path. Mikroorganismen, Jena, 1913, Ed. 2, vii, 531, 539.
9. De Vecchi: Arch. f. Schiffs- u. Tropen-Hyg., 1909, xiii, B. 4, p. 143.

HISTOLOGIC EXAMINATION OF OTHER TISSUES

Just prior to our departure from Lima, and after our investigations there had been completed, we obtained from the Hygienic Laboratory and from the Dos de Mayo Hospital blocks of tissue from necropsies not performed by ourselves. In these cases a diagnosis of Oroya fever or of verruga peruviana had been made during life. We were unable to obtain complete histories of these cases. In some it was stated there had been verrugas on the skin during life, or in the viscera at necropsy. However, our experience in Peru has led us to believe that lesions may be sometimes referred to as having been due to verruga peruviana, which more careful investigation showed to be of an entirely different nature. These tissues were sectioned and studied, and the results of this study are interesting.

From the description which we have already given of the pathology of Oroya fever, it is evident that the histology of this disease is pathognomonic. In the study of the tissues just referred to, the finding of the characteristic lesions, and particularly the presence of the swollen endothelial cells containing the parasites, in at least one of the cases, enabled a definite diagnosis of Oroya fever to be made. As has been stated, the diagnosis of some of these cases given to us was verruga peruviana with Oroya or Carrion's fever.

It is evident that cases of verruga peruviana have been mistaken for cases of tuberculosis, and the tissues from two of the cases referred to above evidently came from patients suffering with tuberculosis, since tubercles and tubercle bacilli were found in the sections. It seems evident that the tubercles present in the liver in these cases were considered as verrugas of the miliary type. That other such mistakes have been made we are confident from the fact that miliary tubercles in the spleen and liver due to *Bacillus tuberculosis* have been shown us by physicians as internal verrugas. It is clear, therefore, that in Peru, miliary tuberculosis has sometimes been diagnosed incorrectly not only as verruga peruviana, but also as Oroya fever. Obviously also, miliary tuberculosis may occur as a complication of either disease.

ETIOLOGY OF CANCER IN THE LIGHT OF RECENT CANCER RESEARCH*

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I had in mind calling attention to certain recent developments in cancer research. As it would be impossible, however, in the limits of this paper, to outline the advances made in so extensive a field, I shall attempt to appraise the value of certain new discoveries, without attempting sweeping generalizations, in the belief that this will prove more profitable than a more general survey of the subject.

Perhaps the more important problems in cancer research center in the so-called parasitic theory. In the past there has been intense and at some times almost bitter controversy over the tenability of this theory. To-day, however, through the discoveries of filterable viruses causing different types of sarcoma in chickens, we may assume that the parasitic hypothesis is at last justified. When it has been determined that one genuine neoplasm is caused by a viable agent or organism, those who have contended for the parasitic theory as a working hypothesis will feel that the period of controversy on the merits of the hypothesis has passed. The question which will mostly concern us in the future is whether only a few neoplasms are caused by living organisms or whether living organisms are responsible for a large part of that group of tissue growths which we call malignant.

There are striking indications that the views of investigators of cancer in general are gradually coinciding. The views of those who have been opposed to a parasitic theory have been modified by the results of research to such a degree that there has been a steady drawing together of opinion as to the cause or causes of neoplasms. Thus we find Versé, in Marchand's Institute in Leipzig, reviewing the more recent discoveries of cancer research in an inaugural address in which he concludes that the agent which endows a normal cell with malignant characteristics is, in many cases, a biochemical agent acting from without the cell. We also hear of activators, and we find that some workers still contend that the filterable agents of Rous are not viruses, but hypothetic bodies of the nature of ferments or other biochemical products. We do not need to concern ourselves with the question whether or not there exists life in unorganized form, and whether there may exist agents so closely allied to ferments as to be able to fulfil the requirements of filterable viruses. The significant thing is that the agent which Rous has separated from the cells fulfils the requirements of, and belongs in, the group of filterable viruses. Most of these are the cause of well-known infectious diseases.

It is now generally recognized that there are well-defined agencies which work at least locally in a predisposing manner. These bring about what may be properly termed precancerous conditions of the tissue. They are mechanical, physical (thermic and actinic), chemical, infectious-inflammatory and other agents. They are of such varied nature that we find generalizations being made that the cause of cancer is really the multiplex complications and activities of modern life. So far as they may be determined locally, they are well summed up as chronic irritation, but it has been shown in exceptional cases that the predisposing changes in the tissue are not of a chronic nature, that even a single trauma may suffice; but such cases are exceptionally rare. The time between the establishment of the so-called precancerous condition and the advent of cancer may frequently be very long, many years, but by careful study of individual cases, the local predisposing features may be definitely determined in a high percentage of cases. Thus von Brun, who confined his study to the superficial skin cancers which are most easily studied, was able in 368 cases to determine a predisposing irritant in all but forty-eight. The relation of remote trauma and chronic irritation to malignant tumors is so well known to clinicians that it is not necessary to dilate on this phase of the question. The evidence of chronic irritation as a predisposing feature in the advent of cancer has been recently revived by the demonstration of nematodes, mites and acarines in the well-known cancer of the breast in mice, and the interesting cases of both carcinoma and sarcoma in rats starting from the walls of echinococcus cysts and cysticerci. Febiger has determined the cause of the irritation to be a minute nematode in cancer of the

* Read before the Chicago Medical Society, Nov. 11, 1914.

esophagus and stomach in rats. The significance of worms and their embryos in bilharzia disease has long been known. In such cases these larger parasites set up chronic irritation, which, however, is not always followed by cancer. This indicates clearly that they are not an efficient cause of the disease, but act as some would believe through toxic biochemical products, which they elaborate, or as carriers of a specific virus.

Besides the local predisposing or precancerous conditions, it is now known that there are predisposing factors of a more constitutional nature. Thus, since 1904, through experimental work with mice and other animals, it has been known that there is a definite constitutional susceptibility to the disease. This is both of the so-called natural and the acquired type.

As a result of the important studies in heredity of Dr. Maud Slye, many believe that there is at least a transmissible predisposition to the development of cancer in mice. This knowledge is certainly of the greatest importance to clinicians, and many of the vagaries of the development and course of cancer in human beings can now be more or less satisfactorily explained. The principal advance is found in the knowledge that factors which determine the advent of cancer in the human being have to do not alone with the direct action of a biochemical agent or living organism on the cell, but also with equally important, and probably equally varied, causes which diminish the resistance of the individual to the disease.

It has been well said by several writers that the time has come when we should study cancers and not cancer. It has been shown that the local predisposing factors included under the head of chronic irritation are of the most varied sort. With the positive knowledge which we have acquired of certain neoplasms in animals in which the existence of a neoplastic virus has been definitely established, it is no longer possible to believe that there is such a thing as a single cancer parasite. We are face to face with the probability that if the various types of cancer are to any great degree caused by such viruses, there are many of them and probably each has marked specificity for one type of tissue. The discovery by Peyton Rous of a filterable agent which causes a spindle-cell sarcoma in chickens, and his more recent demonstration of two other types of sarcoma, one a clefted sarcoma with sinuses, and the other an osteochondrosarcoma, each caused by a specific virus capable only of producing that type of tumor and no other, show for these three viruses a degree of specificity which no one had ever anticipated. Rous' work is of epoch-making character in that he has demonstrated the existence of what was previously a hypothetic cancer virus.

Besides the tumors which he has studied there are several other neoplasms in the lower animals in which there is more or less definite evidence of infectivity. They are a round-cell sarcoma in the dog, spindle-cell sarcoma in German hares and the so-called adenocarcinoma of the thyroid in the salmonoid fishes. It may be stated for this entire group that we have either positively determined the infectious cause, as in the chicken sarcomas, or that we have arrayed an amount of evidence in favor of the parasitic nature of the others which places it almost beyond a reasonable doubt. It is, therefore, interesting to note that writers who are antagonistic to the parasitic hypothesis have classed these neoplasms as growths of undetermined status, whereas in reality they are neoplasms of determined or nearly determined status: the great bulk of neoplasms from which these authors would attempt to separate them are really the neoplasms of undetermined status. From this group we learn that although they have in common a positive or probable parasitic origin, yet the mode of operation of these known or nearly demonstrated viable causes indicates great points of difference. From them we learn that it is difficult to make sweeping generalizations on the probable causes of the great group of neoplasms of undetermined status. There is no longer any impropriety in speaking of a cancer virus because such a virus has arrived in the chicken sarcomas, yet the positive knowledge regarding cancer has been so meager in the past that the temptation is great to search the facts relating to cancers in general in the light of these specifically determined ones.

We have always defined neoplasm as a growth of cells deviating from the normal, which possesses the power of limitless growth, which infiltrates the surrounding structures, thus living at the expense of the organism, and which, when transplanted through the circulation or lymph, is capable in most cases of setting up secondary growths or metastases. Experiment has shown that a malignant neoplasm may not present at one time all the characteristics enumerated above. Thus the power to form metastases may be wanting, and in the course of transplanting the neoplasm this characteristic may appear. We have included in this group tissue growths of the most diverse character, even those resulting from proliferation of embryonic structures such as dermoids. These have but the slightest resemblance to genuine neoplasms. Theories regarding the nature of cancer, based on the similarity of embryonic development to the growth of tissues in pathologic conditions, are responsible for their inclusion. When finally the causative agents have been determined for each type within this group, we shall have a rational basis for the classification of neoplasms.

The existence of an immunity to transplanted cancer was established by the observation at the Gratwick Laboratory, by Clowes, Baeslack and myself, that mice which were inoculated with cancer of the breast sometimes recovered after the tumor had made appreciable growth, and that for a long period after such recovery they could not be successfully reinoculated with the same tumor. This observation was followed with the further observation by Clowes that in the particular cancer at that time under observation, the Jensen mouse carcinoma, if the blood of the recovered mouse was mixed with a suitable portion of the cancer to be transplanted, incubated for a period and then injected into an animal, it usually failed to grow. If the interpretation of this observation was correct, it proved the existence of a slight but definite passive immunity. The experiments of Crile and Beebe with the round-cell sarcoma in dogs strengthened these observations, these authors showing that if the blood of a dog, recovered from implants of the round-cell sarcoma in question, was transfused into an animal with growing tumors, in many cases a prompt regression with recovery occurred. Levin, working with a spindle-cell sarcoma in rats, reported experiments confirming the existence of an immune factor in the blood of recovered rats capable of inhibiting the growth of implanted sarcomas in these animals. Von Dungern, working with a spindle-cell sarcoma in rabbits, also obtained marked evidence of passive immunity. The conditions

which surround observations of this kind in a given transplanted carcinoma or sarcoma in the mouse or rat are so variable that many observers have failed to confirm these observations. It is interesting to find that an investigator like Bashford, who has previously opposed the idea that the blood carries anything approaching antibodies, states in his last report that cancer cells in the mouse injected into the circulation of recovered or resistant animals are robbed of their power of proliferation.

The existence of a specific immunity in cancer was obscured by the observations of Schöne and others that a certain amount of resistance to the implantation of mouse cancer could be obtained by using normal tissues, either adult or embryonic. It was pointed out at once that it was possible that this form of resistance was of a different quality from the resistance in the animal which had recovered from cancer. It was possible that normal tissues produced a resistance in the animal to the transplantation of foreign cells, but that there was still a specific immunity to the disease directed against the cause and not against foreign cells implanted in the animal.

Attempts to inoculate tumors of an alien species into animals were first undertaken by Ehrlich, who succeeded in inoculating mouse cancer into rats or vice versa. They were found to grow for short periods. Later it was shown that in embryos, such as an incubated egg of the chicken, with proper technic, rat sarcoma or mouse cancer or other tumors of alien species could be grown indefinitely, thus indicating that the immune mechanism to tumors had not yet developed. As this applies also to alien normal tissues and bacteria, it may be assumed that in the chick embryo the entire immune mechanism is not yet established. These experiments, made by Murphy on the chick, have recently been extended by Bashford to very young mammals, and it would appear that here also the immune mechanism has not yet come into activity.

In this connection it is interesting to note that one of the most effective normal tissues available for setting up a resistance in animals to implanted cancer is the spleen. The first attempts to immunize with splenic tissue were made by Bridré and later by Woglom, and an extremely interesting contribution on this subject was made in 1911 by Braunstein of Moscow, who showed that removing the spleen in mice made them susceptible to the implantation of mouse cancer when they were otherwise resistant. Braunstein argued that the site of the resistance to cancer as well as to infectious diseases, and probably also to implanted foreign tissues, was in the lymphatic apparatus. He proposed that the splenic tissue of immunized animals should be used in the treatment of established cancer. His evidence, while not conclusive, is extremely suggestive of the correctness of his theory. He also observed that mice which had been splenectomized died in a few days after the injection of alien cancer without developing tumors, and viewed this as evidence of the destruction of the immune apparatus. In support of his theory he has made the following interesting points: First, the extremely rare occurrence of metastases in the spleen; second, the prompt destruction of transplanted embryonic tissue of the same species when implanted in the spleen; third, the demonstrated immunizing power of splenic tissue against malignant tumors; fourth, the rapid death of splenectomized animals when injected with cancer of other species, and fifth, the evidence pointing to the spleen as the principal source of all antibody formation of both bacterial and nonbacterial nature.

Murphy has recently been able to accomplish transplantation of heterotypic neoplasms, such as the Ehrlich mouse sarcoma, in the adult rat, by injuring the lymphatic apparatus of the hosts by repeated treatments with the Roentgen ray. At the time of his first publication on the subject he had succeeded in carrying the mouse sarcoma through three successive transplantations in rats thus injured, the growth varying from twelve or fourteen days to over thirty.

The difficulty of determining whether the immunity against cancer is a tissue immunity or a specific immunity against an agent was originally complicated by the observation that the best results were obtained with living cells, either normal or cancer cells. In 1910 we were able to report an interesting case of spindle-cell sarcoma of the jaw in a human being, which was influenced by injections of fresh rat sarcoma and later by injections of dried rat sarcoma material. We were led to attempt this experiment by an observation made in 1907, when it was found that in a slowly growing transplanted spindle-cell sarcoma of the rat, secondary and tertiary inoculations could be made to grow. By inoculating on each successive sixth day, twenty-five out of forty rats developed more than one tumor. These multiple inoculations proceeded side by side for a period equal to that usually required to kill, and then all of them retrograded, leaving the animals immune. This indicated that in some tumors there was a concomitant immunity set up by a first inoculation which could be stimulated by subsequent inoculations to a point at which it overcame the disease and brought about the regression of the tumors with cure. Since 1909, attempts have been made to influence human cancer by vaccinating with the patient's own cancer cells or with cancer cells from other human cases, and with some sporadic successes such as the cured case of cancer of the breast treated in this way and demonstrated at the Second International Cancer Congress by Bertrand of Antwerp, and several cases of sarcoma.

If a living cell were always required to produce the immunity to cancer, it would be impossible to demonstrate the existence of a specific immunity. Our own experiments with two cases of human sarcoma, favorably influenced three years ago and apparently now cured by the use then of dried, powdered rat sarcoma, strongly indicate that there is an immune mechanism opposed to the cause of cancer and not alone to the growth of cells. Extensive and important experiments to determine this question were again made in 1914 by Koenigsfeld, working in Pfeiffer's Laboratory in Breslau. This observer finds that a definite immunity against the growth of mouse cancer can be induced in susceptible mice by an intraperitoneal injection of small but increasing amounts of dried, sterile mouse cancer. This resistance can be produced against the most virulent tumors, and lasts for many weeks. In experiments to determine whether the dried powder of normal cells would induce a comparable immunity, he found that this was not the case. Whereas the living cells of the spleen, kidney or liver of the mouse produced the well-known resistance of previous investigators, the dried powder was devoid of such action. This author concludes that the protection thus obtained with dried tumor material is specific and probably due to the development of genuine antibodies.

When we realize that the dry tumor powder of Peyton Rous' chicken sarcomas contains the living virus which causes these neoplasms, we have at least a basis for extending the possibilities of these results. Rous has recently published an article on the immunity of transplantable chicken tumors and arrives at the following conclusions:

> The phenomena of natural and acquired resistance to transplanted chicken tumors strikingly resemble those observed in the case of transplanted mammalian growths; and no more than those do they suggest that the tumors have an extrinsic cause. That there may exist in fowls implanted with a chicken tumor a resistance directed against the tumor-causing agent distinct from the resistance manifested against the alien tumor cells has been shown in a previous article, both sorts of resistance in such an instance being acquired. That directed against the agent is largely specific, giving little if any protection against the agents causing other tumors. There is some evidence that the conditions on which a fowl's natural resistance depends are the same for the agents causing different chicken tumors.

The case, therefore, for the existence of a specific cancer immunity directed against the cause of cancer and not against a cell, which we strongly advocated before the International Cancer Congress in Paris, 1910, so far as Rous' group of tumors is concerned, is now demonstrated, and the striking similarity of the results obtained with his tumors, so long as transplanted tumors are used as the basis of his observations, shows how closely these tumors agree in behavior with the transplanted mammalian tumors in the smaller animals. In the light of our present knowledge of the immunity to cancer, we may review certain clinical facts which have impressed every observer of this disease. It has been shown in mice that when an animal is inoculated with a tumor, it promptly develops a certain amount of resistance to the growth of the tumor. If an attempt to inoculate it in the early stage with a second tumor is made, the second tumor will frequently not grow. If, therefore, it is known that the power of growth can be taken from cancer cells by treating them with the blood of recovered animals or by injecting them into the circulation of resistant animals, we have an explanation of the mechanism of metastasis formation.

Goldmann, many years ago, showed by careful histologic studies of cancer of the breast that individual cancer cells, in the early stages of the disease, penetrated into the blood vessels and were thus transported, but that in many cases they did not produce metastases. He reasoned from these observations that there was an immunity exerting itself through the blood. Experiment has now shown this to be the case, and we may assume that the resistance which is concomitant with the development of cancer even in man is the force which protects the organism from secondary growths; but when this immunity finally fails, this occurrence is marked by the advent of metastases. This type of immunity may be a tissue immunity directed against the cancer cell. This phase of the immunity may explain those cases in which early operation has not been successful in removing all of the cancer tissue, yet the growth has not recurred. These observations are also in accord with the theory that there is developed in the human being as well as in animals both a tissue immunity and a specific immunity.

That the blood in cancer cases contains antibodies or antiferments opposed to the cancer cell is clearly shown by the presence in such cases of reactions such as the deviation of complement reaction and the more recent Abderhalden reaction. All of these reactions are, however, non-specific. All of them are found in pregnancy, which is characterized by the growth of foreign tissues in the organism, and they are also found in certain other pathologic conditions associated with the destruction of tissue. It must be remembered that all these reactions are based on the use of antigens made from cancer tissue. As we have as yet no means of isolating even the known viruses from the protein constituent of the cells, it is impossible to determine whether or not a specific reaction can be perfected for a given cancer. That such reactions as the Abderhalden are non-specific is shown by an interesting clinical observation. The antibodies in the blood in pregnancy are opposed to the growth of the embryonic epithelium of the chorion in the placenta, and it is believed that they serve to protect the mother from the invasion of her tissues by these cells. Now there is an especially interesting type of carcinoma which develops in the chorion epithelium and is known as chorion carcinoma, and chorion carcinoma has been known to develop during the course of pregnancy in the face of the Abderhalden reaction, which thus shows that the antiforces demonstrated by this reaction are opposed strictly to the normal chorionic epithelium and not to the agent which brings about the change in its structure in producing a cancer. The non-specific nature of the Abderhalden reaction is further illustrated by an interesting case, reported by Versé, of a woman in the fifties who was found to have a marked Abderhalden reaction, and examination showed that she had a developing chorion carcinoma from a previous pregnancy.

Experiments made many years ago in our institute showed that the growth of implanted cancer in a mouse could be expedited by repeated and prolonged anesthesia with ether and chloroform. It was not determined whether the anesthetics produced their apparent injury to the immunity directly in the blood or by an injury to the spleen and lymphatic apparatus, but these experiments suggested that prolonged anesthesia at operation in the case of cancer in human beings might be a very prejudicial factor in the subsequent history of such cases. Every surgeon has had the disheartening experience of finding cancer cases promptly made worse by surgical interference.

Something similar has been noted in the treatment of tumors by radiation. Thus we find Lazarus, in 1914, warning radiologists to protect the spleen and lymphatic apparatus, and by experiment showing that there is a degree of radiation which greatly stimulates the growth of tumors. He says that by the photographic method he has been able to demonstrate in a case of cancer of the uterus treated for twelve hours with 86 mg. of mesothorium in the cervix, that the entire organism was affected by radiations. Plates which he laid over the lungs, the heart, the liver, the spleen, the kidney, the ovaries and the tibia during the period showed pronounced blackening. It is possible that the explanation of these remarkable results of Lazarus is to be found in recent observations indicating that the serum and red blood cells of the blood can take on photo-activity as the result of exposure to the Roentgen ray. Eden, at a recent meeting of the Natural Science and Medical Society of Jena, reported experiments which indicate that the red blood cells and serum after exposure to the Roentgen ray have a

slight but distinct power of reducing photo silver on plates. These experiments were made by exposing the blood in vitro in petri dishes, and producing the blackening of photographic plates through the usual layers of black paper. If the blood serum and red blood corpuscles are capable of carrying radio-activity, then the remote injury to the lymphatic apparatus and the results obtained by Lazarus might be explained.

Tyzzer and Duvane have recently shown that injection of small amounts of radium emanation in the circulation of mice causes a prompt and extensive destruction of the lymphatic apparatus, and other observers, working with the Roentgen ray and radium, have shown the same phenomenon. The frequency with which cases treated with radium or the Roentgen ray show marked stimulation of growth with rapid fatal termination may well be explained as an injury to the lymphatic apparatus with a loss of immunity. The whole picture of cancer from a clinical point of view must now be viewed in the light of the facts pertaining to immunity, and we may also begin to consider the existence of viruses or infectious agents as the cause of the disease. The existence of specific cancer viruses in chickens entitles us to this point of view. The general similarity of the immune phenomena in experimental animals, correlated with many facts which occur in the clinical course of human cancer, strongly suggests that such agents will be found to play a more or less extensive rôle in the cancers of undetermined etiology.

In closing, it may be asked what has become of the inclusions in cancer. It may be stated that specific inclusions are more or less characteristic of a considerable group of infectious diseases caused by filterable viruses. These inclusions have been gathered together by Prowazek into a group of protozoan organisms to which he has given the name of clamydozoa. The diseases are variola, vaccinia, trachoma, hydrophobia, molluscum contagiosum, epitheliosis desquamativa conjunctivae, inclusion blennorrhea, verruga peruviana, contagious epithelioma of birds, yellow blight of silkworms, alastrim, sheep pox, and probably hog cholera, scarlet fever, varicella, Samoa-pox and lesions with Kurloff bodies. In all of these diseases there are quite distinct and characteristic inclusions in the cells. At the meeting in 1913 of the German Pathological Society, Rocha of Hamburg presented a paper on this group of inclusions as organisms. In the discussion we find authorities like Marchand frankly agreeing that the questionable bodies in several of these diseases, but particularly molluscum contagiosum, are parasites. There are thirty-odd known filterable viruses. From the list already given it is to be seen that they cover a very wide range of diseases, and among them must now be included the three specific viruses causing neoplasms discovered by Rous. It is interesting also to remember that but recently Noguchi has cultivated the virus of hydrophobia. The scope of cancer research is thus tremendously broadened. It is possible that at a later date we shall know the true significance of inclusions in these diseases and in cancer, and the question of their significance may well be left to future investigation.

As stated early in the paper, one of the most fruitful advances in cancer research must be a realization of the fact that cancer no doubt represents a great group of pathologic changes having many points of similarity which have led us to classify them under one head, cancer. Within this group there must be a great range of agents, probably a number of specific viruses which we have yet to discover and to study. The cancer problem will never be taken by assault as Ehrlich once stated, but it will be broken up into a great field which will require many years of patient and extensive work of many investigators.

PREVALENCE OF SYPHILIS AMONG THE INMATES OF THE GOVERNMENT HOSPITAL FOR THE INSANE

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The following investigation was undertaken for the purpose of obtaining further information with regard to the prevalence of syphilis among the insane in this country. There seems to be comparatively little accurate information bearing on this topic, probably because there are few insane asylums in which the Wassermann reaction is performed as a routine procedure.

Ivey[1] reported the results of a Wassermann test among the negro insane of Alabama. The test was performed in every case in the asylum, with the following results: 357 males were examined, of whom 90, or 25 per cent., were positive; 349 females were examined, of whom 102, or 29 per cent., were positive. Among the 90 males positive, 48 showed clinical signs of syphilis, and among the females positive, 49 showed clinical signs. It is an undoubted fact that syphilis is more common among the negro race than among the white race, and therefore these figures give little information as to the prevalence of syphilis among the white insane.

Matson,[2] who applied the Wassermann reaction in the study of the insane in 1910, says:

> The importance of syphilis in the psychic infirmities is indicated by our examination of 470 inmates of the Oregon State Insane Asylum. Nearly 20 per cent. gave positive reactions while only 5 per cent. gave specific histories, and none presented visible or clinical manifestations. . . . Nearly 15 per cent. of 51 cases of dementia praecox were positive, while none gave a syphilitic history. Sixteen per cent. of 151 cases of paranoia were positive. Twenty-five per cent. of 40 cases of chronic mania were positive, 20 per cent. of 26 cases of chronic melancholia were positive, and 20 per cent. of 62 cases of dementia were positive.

Mitchell[3] states that at the Warren State Hospital for over a year, the Wassermann test has been used in the examination of all new cases. He says:

> The percentage of syphilitic cases among our new admissions is of primary interest. During the last year 18.5 per cent. of female admissions showed positive serum on the first test, and 22.3 per cent. of the males gave the same result.

1. Ivey: The Wassermann Reaction in Negro Insane, Med. Rec., New York, 1913, lxxxv, 712.
2. Matson: On the Application of the Wassermann Reaction in General Medicine, Based upon 968 Examinations with Especial Reference to the Blood of the Insane, South California Practitioner, 1910, xxv, 49.
3. Mitchell: General Paralysis of the Insane, New York Med. Jour., 1914, c, 605.

Southard[4] says:

The best information available to me as to the general percentage of syphilis to be found in mental cases is that afforded by our experience at the Psychopathic Hospital covering 1,671 separate random tests on different persons. Two hundred and sixty-four of these 1,671 persons were determined to show syphilis so far as the Wassermann reaction carried out under the precepts of the original method can be trusted. I consider that there is no better set of data available for Massachusetts. This will be found to work out a percentage of 14.7 per cent. for our psychopathic intake.

Unfortunately Southard gives no data as to the class of mental cases examined, as to the proportion of males to females, etc.

The Government Hospital for the Insane, Washington, D. C., is an institution maintained by the government for the care of those who become insane while in the public service. All soldiers, sailors and federal prisoners who become insane are sent to this institution, and all insane for the District of Columbia are here provided for.

While the majority of the patients are white males, there are a considerable number of females, and a fair sprinkling of negroes from the District of Columbia.

The Wassermann reaction has been performed at this institution by one of us (Hough) for several years in selected cases, but such cases afford no index of the prevalence of syphilis among the inmates as a whole. More lately the Wassermann has been performed as a routine procedure on each new inmate, and in addition a complete study of the spinal fluid, including a Wassermann, a cell count and protein estimation has been performed on all suspected cases. In this way we have a record of 616 cases, taken just as they come, in which the Wassermann test was made by Dr. Hough.

The technic used by Dr. Hough is that recommended by Landsteiner, Müller, and Potzl.[5] Three units of sheep-rabbit amboceptor are used with a 10 per cent. alcoholic extract of beef heart. In this preparation of the extract the tissue is macerated at 56 C. (132.8 F.) for two hours and then kept at room temperature. If this extract is kept on ice, its strength is markedly reduced.

The results obtained in these cases may be tabulated as in Table 1.

4. Southard: Statistical Notes on a Series of 6,000 Wassermann Tests for Syphilis Performed in the Harvard Neuropathological Testing Laboratory, Boston Med. and Surg. Jour., 1914, clxx, 947.

5. Landsteiner, Müller, and Potzl: Ueber Komplementbindungsreaktionen mit dem serum von Dourinetieren, Wein. klin. Wchnschr., 1907, xx, 1421.

In discussing these results, it becomes necessary to interpret the readings of the Wassermann reaction. In general, it may be said that the reaction performed in these cases was very conservative, in that no use was made of the more recent cholesterinized antigens, and in the use of three units of complement instead of two. From these facts we may make the following deductions:

1. The double plus reactions are absolutely indicative of an existing syphilitic infection.

2. The plus reactions may also be accepted as a positive indication of syphilis. Most of these plus reactions would have been double plus, had a cholesterinized antigen been used with two units of complement. In this connection it is interesting to note that of these seven plus reactions, one was a case of paresis, two occurred in cases of cerebral lues, two in patients having questionable histories, leaving only two of the seven that were not confirmed by the clinical history.

3. The plus minus reaction, while not diagnostic, is extremely suggestive of the presence of a syphilitic infection. However, in order to be on the safe side, no plus minus reactions have been counted.

Of the 616 cases, forty-two were diagnosed paresis and fifteen were diagnosed as cerebral lues. Twelve of these cases of paresis and six of the cases of cerebral lues had a negative Wassermann. They had, however, an increased cell count and protein content in the spinal fluid. While there may be some question as to whether these were truly cases of paresis or of tertiary syphilis of the brain, there can be no question as to the syphilitic nature of the lesion, and no one would hesitate to include these cases among the syphilitics. The same may be said of the other five cases having increased protein and high cell counts. The fourteen cases with a positive history are cases having an undoubted history of syphilis with treatment in the past, but in which all the laboratory findings were either negative or, with the exception of the Wassermann, were unobtainable.

Accepting these findings as correct, several interesting points are brought out:

1. There was no syphilis demonstrable among the eighty-three white females. There are a number of known syphilitics among the white females in the institution at the present time, but it so happened that none fell within the period covered by this survey. The number of females included in this group is so small that it is manifestly undesirable to draw definite conclusions from them. It seems clear, however, that syphilis among white females in this institution is comparatively rare.

TABLE 1.—RESULTS OF WASSERMANNS IN SIX HUNDRED AND SIXTEEN CONSECUTIVE CASES

	Number Examined	Double Plus	Plus	Plus Minus	Negative Wassermann				Total Syphilitic Counting all but Plus Minus Wassermanns	
					Paresis	Cerebral Lues	Increased Cell Count	Undoubted History	Number	Per Cent.
White males	374	42	4	3	11	4	5*	7	73	19.51
White females	83	0	0	0	0	0	0	0	0	0
Colored males	93	11	2	4	1	1	0	7	22	23.65
Colored females	65	6	1	1	0	1	0	0	8	12.30
Total	616†	59	7	9	12	6	5	14	103	16.72

* All of these cases had a positive Noguchi test for protein; the cell counts were respectively 9, 20, 120, 88, 160.
† One Indian is included in this total.

2. The percentage of syphilis among the colored males (23.65) agrees fairly closely with the figures obtained by Ivey (25 per cent.).

3. The percentage of syphilis in colored females (12.30) was much below that reported by Ivey (29 per cent.). The number of colored females examined was, however, very small, and studies that have been made by one of us, and which will be published later, indicate that Ivey's statistics for colored females are probably much more accurate than those obtained by us in this small group.

4. The total percentage of syphilis actually found in the 616 cases (16.72) is somewhat higher than the figures reported by Southard for Massachusetts (14.7 per cent.). This might be because we are dealing with a different class of cases, but we do not think so. We are rather inclined to think that it is because our figures are not based on a Wassermann reaction alone, but on a Wassermann reaction in association with the clinical diagnosis and an examination of the cerebrospinal fluid. Matson's figures were higher (20 per cent.).

5. Even by these methods, not all cases of syphilis are detected. In addition to the cases which we have tabulated as syphilitics, twenty-six other cases with negative Wassermanns had a history of having had a chancre. We cannot with scientific accuracy include these cases as positively proved syphilitics, but the probability that these additional twenty-six cases (4.2 per cent.) were syphilitic is very great. If so counted, this would raise the percentage of all cases to 20.92.

6. There were forty-two cases diagnosed paresis, and fifteen cases diagnosed cerebral lues. Adding to these the five cases having increased cells and globulin, we have sixty-two cases, or 10.06 per cent., of the insane in this institution whose insanity is directly due to syphilis. Probably the percentage is higher than this.

A further series of 667 cases was undertaken. These included the insane from several buildings taken at random with no other method of selection than to take every man in the building. The patients included were all white males, but patients with paresis and cerebral lues were seldom housed in these wards, and only five such cases are included in these 667 cases. In 237 of these cases the Wassermann reaction had been performed by Dr. Hough in the course of his duties. In the remaining 432 cases the Wassermann was performed by Vedder at the Army Medical School, using the technic described by Craig[6] with a cholesterinized human heart antigen. The results of these tests may be summarized as in Table 2.

In considering these results, it must be remembered that when a cholesterinized antigen is used in the Wassermann, a higher percentage of positives is obtained. The fact that Hough, using a non-cholesterinized antigen, obtained 7.23 per cent. double plus, while Vedder, with a cholesterinized antigen, obtained only 6.94 per cent. of double plus reactions, appears to contradict this view. This is due, however, to the fact that the reactions performed by Hough were mostly on men suspected of having syphilis.

Counting double plus reactions alone, it will be seen that 7.04 per cent. of this series of male white insane, from which cases of paresis and cerebral lues were practically excluded, are undoubtedly syphilitic. This figure, however, is undoubtedly too low, and a much closer approximation to the facts will be obtained by counting both double plus and plus reactions. In this way we find that of a total of 667 cases, 110, or 16.48 per cent., are syphilitic. This of course is an estimate, but it is a too conservative estimate. It has been our experience that in the great majority of plus reactions returned, investigation has shown that the patient was syphilitic. In a recent article on the efficiency and specificity of the heart cholesterin antigen, Walker[7] states that he tested this antigen on 400 negative cases in a 1:6 dilution in place of the usual 1:10 dilution. But even when used in this strength a plus reaction (50 per cent. inhibition of hemolysis) was obtained in only eight cases. It follows from this that a plus reaction with a 1:10 dilution, which we always used, is very strong evidence of the existence of syphilis.

Further, if the reactions performed by Vedder with the heart cholesterin antigen are considered alone, and both double plus and plus reactions counted as syphilitic, we find that eighty-eight cases, or 20.26 per cent., show evidences of syphilis. This estimate is not believed to be excessive; for, granting that some of the plus reactions are from non-syphilitic cases, it must be remembered that there are undoubtedly more cases of syphilis missed among the plus minus and negative reactions than are necessary to counterbalance the few false positives included under the plus reactions.

The most efficient Wassermann reaction will miss a considerable percentage of syphilis. In a recent investigation by Vedder and Borden,[8] 744 inmates of a soldiers' home were studied. It was found that by using the Wassermann reaction alone and counting both double plus and plus reactions, 20.8 per cent. of syphilitics were detected, while by using both Wassermann and luetin tests on the same men, 45.4 per cent. of syphilitics were detected. This indicates how far the Wassermann reaction, even when both double plus and plus reactions are counted, will fall

TABLE 2.—RESULTS OF WASSERMANNS IN SIX HUNDRED AND SIXTY-SEVEN RANDOM CASES

		Double Plus		Plus		Plus Minus		Minus	
		No.	Per Cent.	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
Hough	235	17	7.23	5	2.12	5	2.12	208	88.51
Vedder	432	30	6.94	58	13.42	96	22.22	248	57.40
Total	667	47	7.04	63	9.44	101	15.14	456	68.36

6. Craig and Nichols: Studies of Syphilis, Bull. 3, War Dept., Office of the Surgeon General, p. 72.

7. Walker, I. C.: The Specificity of Cholesterin with Syphilitic Serums and of Cholesterin-Reinforced Heart Antigen in the Wassermann Reaction, Arch. Int. Med., October, 1914, p. 563.

8. Vedder, E. B., and Borden, W. B.: A Comparison of the Wassermann and Luetin Reactions in 744 Individuals, THE JOURNAL A. M. A., Nov. 14, 1914, p. 1750.

short of the facts when a considerable proportion of the cases tested are latent, tertiary or treated cases. Many of the patients included in our series of 1,283 cases were old men who had become insane in various of the soldiers' homes.

We, therefore, estimate that there are 20 per cent. of syphilitics among the male white insane at this institution, excluding cases of paresis and cerebral lues. It was shown above that paresis and cerebral lues furnish at least 10 per cent. of the total male admissions to this insane asylum. It is, therefore, apparent that we may estimate that the percentage of syphilis among all male insane is at least 30 per cent. This estimate will appear too high to many observers, but it must be remembered that if an equal number of female insane, among whom the percentage of syphilis is lower, were included, these figures would be only slightly higher than those quoted by Southard. It is to be expected that the percentage of syphilis among the insane will be higher than among the same class of men who are not insane. One of us has statistics which will be published later that indicates that about 20 per cent. of the young men of the community, of the class that enlist in the army and navy, are infected with syphilis. If this is correct, the 30 per cent. of syphilis among white insane males is exactly accounted for by supposing that the insane are affected by syphilis to exactly the same percentage as similar males who are not insane, plus the 10 per cent. that accumulate in the insane asylum because of paresis and cerebral lues.

As the result of a study of 1,283 cases we reach the following conclusions:

1. Syphilis among the white women in this institution is comparatively rare.
2. Among white men the presence of syphilis has been demonstrated in 20 per cent. of the cases.
3. We estimate that at least 30 per cent. of white males in this institution are syphilitic.
4. At least 10 per cent. of the insanity in this institution is directly attributable to syphilis.

DISCUSSION

Syphilis is recognized as the cause of insanity in the case of patients suffering from paresis or cerebral lues. It follows as a matter of course that such patients, when committed to an asylum, should receive antisyphilitic treatment, but the treatment actually received is usually insufficient in amount. In addition to these clear cut cases of syphilitic insanity, there are many patients in all asylums suffering from various types of mental disturbance who are also infected with syphilis. It may be presumed that syphilis does not act as a direct cause in the production of dementia praecox, for example, yet in a person whose mentality is already weak, the addition of a syphilitic infection may be sufficient to precipitate a mental breakdown just as any other unusual physical or mental strain might produce a similar result. It follows that if such patients received vigorous antisyphilitic treatment there might be considerable improvement in their mental condition following the improvement in general physical tone resulting from such treatment.

It is believed, however, that it is the exception rather than the rule for this to occur. Few patients when committed to an insane asylum have received a careful physical examination including a Wassermann reaction. After commitment to the asylum, the attention of the physician and attendants is naturally more or less concentrated on the mental symptoms. In many asylums for the insane, the Wassermann reaction is not performed as a matter of routine in all inmates, and experience amply demonstrates that often the most careful physical examination fails to detect syphilitic infections. As a result, many patients remain in asylums for years with an untreated syphilitic infection. It appears to us that it would be better for the patients if more time were devoted to the administration of salvarsan and less to the determination of whether the mental condition is paranoia or the paranoid stage of dementia praecox.

In other words, the psychanalysis of deranged mental states has proved so interesting that the treatment of the diseased organs underlying some of these states has been somewhat neglected. It is not too much to urge that a Wassermann should be made on the blood of each new inmate admitted to an asylum. In all suspicious cases this should be followed by a lumbar puncture and a Wassermann, cell count and protein estimation of the spinal fluid. And last but not least, all cases in which syphilitic infection is demonstrated should receive active conscientious antisyphilitic treatment.

We wish to express our thanks to Dr. William A. White, superintendent of the Government Hospital for the Insane, who afforded us the opportunity to do this work, and to Dr. Alfred Glascock of the Government Hospital for the Insane, who very kindly sent us many of the blood specimens for these examinations, and for other favors extended during the course of the work.

THE VALUE OF THE WASSERMANN REACTION

WITH A DISCUSSION OF THE TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM *

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It has seemed to me that too much dependence has been laid on the Wassermann reaction and that many physicians rely altogether for their diagnosis on the positive or negative reports, and that as a consequence clinical interpretation has been more or less neglected. I have come to the conclusion that the percentage of errors in the diagnosis of specific diseases of the nervous system were no greater in the pre-Wassermann days than at the present time, when an equally large number of mistakes are made by depending too much on serum tests and not enough on the clinical symptoms. The clinician should regard the Wassermann test as a symptom which helps in the diagnosis, but not as a principal factor in the case.

Regarding the Wassermann reaction itself, I do not do the laboratory work and have no comment to make regarding the technic and the methods employed. But in a rather large experience with serologists, both in private and in hospital practice, I have come to the conclusion that it makes a great deal of difference as to who performs the test. To begin with, serology should not be a side issue. It is too important to be anything but the main work of any physician. Secondly, with the various technics and

* Read before the Philadelphia County Medical Society, Jan. 13, 1915.

reagents used by different individuals, it is not at all infrequent to receive different reports on the same specimen from two or more serologists. Consequently, until all laboratory men agree to use the same technic and the same type of reagents, it will be impossible to have uniform results.

I agree altogether with Kaplan,[1] who says:

> I believe the attitude of the serologist is a greater factor in the Wassermann reaction than is the standardization of the reagents. . . . Syphilis should not be diagnosed in the laboratory, nor should the laboratory worker consider himself competent to give the final decision. . . . The general function of the laboratory worker is not so much to detect every syphilitic, but to protect the non-luetic individual from a wrong diagnosis and useless treatment.

Perhaps one example of many similar instances that I have come across will serve to illustrate what, I have no doubt, is a frequent occurrence in the experience of other physicians. Within several weeks I saw, in consultation with a physician, a man of 40 with nervous symptoms which I clinically diagnosed as due to syphilis. The patient himself acknowledged a chancre and told his family physician that he had syphilis; but because of the absence of the usual secondary symptoms this was doubted. He had a Wassermann test made which was reported as negative, and he was not given specific treatment because the physician depended entirely on this report for his diagnosis. A subsequent Wassermann made under my direction showed a very strong positive Wassermann reaction.

I do not want to be understood to mean that I do not value the Wassermann reaction. For years I have been and am still doing laboratory work in the field of neuropathology, and consequently I know the value as well as the weaknesses of laboratory findings; but it is time that the clinician should know and appreciate that the Wassermann reaction is not an infallible test, and that it is the greatest mistake to depend on its findings for a diagnosis. The clinical symptoms should always be the first and last word in the diagnosis of any syphilitic condition.

While many errors are due to lack of uniform technic, it is a fact, however, that the Wassermann reaction is absent both in the blood serum and in the cerebrospinal fluid in certain types of syphilis of the nervous system, and it would be well if a definite statement could be made as to the types of nervous involvement in which this is the case, if such a thing is possible.

It must now be acknowledged that a specific infection is possible without the appearance of a chancre or of the so-called secondary symptoms. The reasons for this are either that the infection is very mild or the resistance of the tissues is such that it overcomes the toxic invasion. Then again, syphilis may appear in the guise of a neisserian infection. These facts are most important, for it is these mild cases of syphilis which later on are followed by tabes, paresis and other kindred diseases of the nervous system.

Inasmuch as the laboratory tests differ according to the site of the lesion, a word or two might be said as to the present views held regarding syphilitic diseases of the nervous system. To begin with, whatever the clinical manifestation, the cause is the *Treponema pallidum*. It has been established that there is no essential difference between the histologic findings in the nervous system and other organs of the body, and further that there is practically no histologic difference between the so-called primary, secondary and tertiary stages.

Until the present, nervous syphilis has been divided into the active or direct manifestations and the so-called parasyphilitic diseases in which are chiefly included tabes and paresis. The old idea was that in a direct involvement there was either a cellular infiltration or a gummatous deposit in the meninges and vessels or in the nervous tissue itself, while the so-called parasyphilitic diseases occurred years after the infection and were due to a toxin only indirectly connected with syphilis. We know now that this is wrong and that there is no essential difference between the so-called direct and parasyphilitic diseases, for in both the pathologic process is due to the *Treponema pallidum*, and the clinical picture is different only because in direct syphilitic diseases the meninges and vessels are implicated, whereas in tabes and paresis the essential nerve structures, that is, the nerve cells and the fibers coming from them, are chiefly involved. While in direct syphilis it is possible to remove the syphilitic infiltration and gummatous deposits by treatment, such a thing is impossible if the nerve cells and their fibers are diseased, because once degeneration has occurred, nothing can stop it, even though it were possible to remove the *Treponema pallidum*, the source of the irritation.

The causes which lead syphilitic infection to localize itself in the nervous system or any other organ of the body are not definitely known. The theory that there is a special treponeme which has a tendency to be followed by nervous syphilis must be abandoned. It is possible that in some individuals the nervous system is the point of least resistance. Certain it is that those infections which occur in the head are more likely to be followed by cranial syphilis. No one knows the percentage of cases of general syphilis which are followed by nervous lesions.

The syphilitic virus may act on the nervous system in two ways: by a general dissemination through the blood stream, and most commonly, by means of the perineural lymphatic spaces which surround every peripheral nerve and which extend along the posterior roots to the spinal pia, they being in direct connection with the adventitial lymph spaces of the perforating vessels. In this way it is possible for the poison to be disseminated directly to the nervous structures.

It is assumed by some neurologists that in the early active stage of the infection the posterior columns of the spinal cord are thus affected, leaving behind some treponeme, and that possibly years later the treponeme for some reason becomes active, and degeneration takes place in the sensitized posterior columns, this producing the symptoms of tabes dorsalis. A similar involvement of the frontal lobes may be followed by general paresis.

It is most important to be able to diagnosticate this primary invasion. It is possible that the early stupor and pyrexia which is sometimes present in the so-called secondary stage may be indicative of a meningitis. Numerous authors, among them Ravaut, Altmann and Dreyfus, have examined the cerebrospinal fluid of acute syphilitics in whom there were no nervous symptoms, and found evidences of meningeal irritation, as shown by increased tension, abnormal quantity of albumin and a definite lymphocytosis. In some instances the treponemes were found in the fluid.

1. Kaplan: Serology of Nervous and Mental Diseases, 1914.

One other factor in the diagnosis of nervous lesions must be taken into consideration. To any one, like myself, who has examined innumerable sections of the brain and cord, the fact has been established that the clinical symptoms are hardly ever in accord with the pathologic findings, and the best that can be said is that the clinical symptoms indicate only the site, but not the extent and nature of the lesion. This must be borne in mind when considering the therapeutics of nervous syphilitic infections, for often, for example, it is difficult to make a clinical differentiation between paresis and brain syphilis.

It is much more important in nervous cases to study the cerebrospinal fluid than the blood serum, for while a positive reaction in the serum indicates syphilis, it does not necessarily indicate that the nervous system is implicated, while a positive reaction in the cerebrospinal fluid is present only when the nervous system is diseased.

The cerebrospinal fluid is studied not only for the Wassermann reaction, but also for the number of cells, from four to eight being the normal number per cubic millimeter. In a specific infection, the number of cells depends on the activity of the meningeal irritation, the greater this being, the larger the number of cells, as many as 2,000 per cubic millimeter being found by some observers. As a rule, the greater the cell count, the stronger the Wassermann reaction. The globulin test should also be made, excess of this being present always in active syphilitic disease.

As a routine measure, whenever syphilitic disease of the nervous system is suspected, the serum Wassermann is always taken first. In a patient in whose case there is no history and no treatment has been given, a so-called weak positive reaction should not be accepted as conclusive. Other tests should be made, preferably by a number of serologists, and the cerebrospinal fluid examined. If there are present the symptoms of spinal syphilis, the Wassermann reaction will always be positive, the globulin will be in excess and the cell count will depend on the meningeal irritation. The serum Wassermann will nearly always be positive. If the brain is involved as well as the spinal cord, the serology will depend on the extent of the spinal disease. If the brain alone is affected, the cerebrospinal fluid may either be negative or the Wassermann reaction fleeting, whereas the blood serum is generally positive. The reason for this is that there is very little active communication between the fluid of the brain and spinal cord, and in the usual lumbar puncture the cerebral fluid is hardly ever touched because there is always a certain amount of stasis in the lower part of the cord.

In early cases of tabes the serum Wassermann may be negative, while the Wassermann reaction in the cerebrospinal fluid is nearly always positive. In the active stage of tabes, the Wassermann reaction is always positive in both the serum and in the fluid, whereas, in the declining stage, it may be negative in the fluid and positive in the serum. It must be remembered, however, that the pathologic process in tabes, in common with other syphilitic diseases of the nervous system, may become quiescent and remain in this stage for years. I have at the present time under my care a patient who has had the symptoms of tabes for thirty-five years without the slightest active manifestations. In these cases the fluid as well as the serum may be entirely negative.

The cell count in tabes is never higher than about 100. In most instances the pleocytosis is about from 40 to 60. In the declining stage the cell count may be normal.

The clinical picture of paresis, especially in those cases which come under observation in private practice, are most commonly of the tabetic type and are better known as taboparesis. From the beginning, the Wassermann reaction in the spinal fluid is always strongly positive, and remains so to the end. The cell count is not very large, from about 30 to 60, although this depends on the extent of the spinal cord involvement. The serum Wassermann may be negative at first, but in a well-established case, it is always positive. It must of course be understood that the serum reactions may be altered by treatment, as will be discussed later. One of the important differential points between paresis and brain syphilis is that treatment will never cause an eradication of the Wassermann reaction in the cerebrospinal fluid, whereas in brain syphilis this can be done.

It is, however, in another type of patients that the laboratory findings are even more important. They are the cases of men and women, around 50 years of age, in whom there are present the more or less indefinite symptoms of cerebral arteriosclerosis. In many there is a history of early syphilis with subsequent mercurial and iodid treatment. The Wassermann reaction in the serum as well as in the fluid may be negative, and there may not be an increased cell count, yet these patients under active syphilitic treatment get well or improve largely. It is in these cases that the clinical judgment is better than the laboratory finding.

I sometimes use Lange's colloidal gold test in the cerebrospinal fluid, as well as the luetin test of Noguchi, but as a rule, in the majority of cases, a diagnosis can be made without the aid of either. The former, as is well known, is a help in the diagnosis of paresis, while the latter is perhaps the most sensitive of all syphilitic tests.

TREATMENT

After the clinical diagnosis is made and before treatment is instituted, an examination should be made not only of the blood serum but also of the cerebrospinal fluid, for the treatment should be guided largely by the nature of the findings.

The quantity of drugs given should first of all depend on the general condition of the patient. Seven years ago in a paper on syphilis of the nervous system,[2] I advocated the abandonment of the use of potassium iodid. I have never found it of the slightest benefit in syphilis of the nervous system. I believe in the intensive use of both salvarsan and mercury. In a patient in whom the clinical and serologic findings are such as to indicate vigorous treatment, my plan is to get the patient under the influence of salvarsan as quickly as possible and to give, depending, of course, on the age and general condition, an intravenous injection of salvarsan every three or four days until about five doses, that is, about 2.5 gm. of salvarsan have been given. Then if there are no contra-indications and the patient is in good condition, and the clinical and serologic findings indicate that treatment should be kept up, he is given a series of four or five intraspinal injections by the Swift-Ellis method, the plan being to give both series of

2. Weisenburg, T. H.: Am. Jour. Med. Sc., April, 1908.

treatments in the course of two months. At the end of that time the patient is sent home for a month with instructions to use inunctions of mercury every other day or have mercury given in the form of salicylate or biniodid, by hypodermic injection into the gluteal region.

My reasons for this plan of treatment are as follows: Whether the patient has an active cerebrospinal lesion, tabes or paresis, there is almost always a meningeal and vascular implication, for it is in rare instances that the parenchymatous structures are involved alone. This being the case, the *Treponema pallidum* can be reached in the meninges and vessels by diffusion of the salvarsan in the blood stream. After this is accomplished, the Swift-Ellis method is used because it is supposed that it gives a more direct means of approaching the treponemes which are buried within the parenchymatous structures, as is the case with tabes and paresis.

Further treatment, of course, depends on the results that have been obtained. If the Wassermann becomes negative and the cell count normal, no further treatment is given excepting that the mercury is kept up at less frequent intervals, more or less indefinitely, and the patient is examined from time to time with the view of finding out the progress of the disease. If, however, the results are not good, a second series of intravenous and intraspinal injections are given, but this time at much longer intervals, preferably every two weeks.

As to the results of treatment: They have been on the whole excellent in certain types of cases. One learns by experience when to give, and what is more important, when not to give salvarsan. I use salvarsan in preference to neosalvarsan. I have not had bad results because I have been careful and have insisted always that even after an intravenous injection the patient be kept in bed over night; and although in some cases my patients have not obeyed my orders, I have fortunately not had bad results. The Swift-Ellis method reacts differently on different patients. I have not had serious complications, although one patient was unable to void urine for forty-eight hours and had to be catheterized. I have learned never to give a second spinal injection until the patient has altogether recovered from the previous one. Nearly always it takes a patient a longer time to recover from each successive injection.

As to citation of more definite cases and results: In spinal syphilis, cerebrospinal syphilis and cerebral syphilis, the results have been splendid and better than could have been obtained from mercury alone. Practically all symptoms disappear which are dependent on the meningeal irritation, and only those remain which are the result of implication of the parenchymatous structure, as happens when a thrombosis of a vessel occurs with a consequent necrosis of the part, or what is more common, when there is an atrophy of the nerve cells and the fibers coming from them.

In tabes my results have been good only in those cases in which there has been great meningeal irritation, that is, the pains have lessened, the patients have slept better and the general condition has improved vastly, but there has not been a return of knee jerks, pupillary reflexes or any of the symptoms which are dependent on permanent destruction of nervous tissue. I found that the Swift-Ellis treatment cannot always be given in tabes because the reaction is terrific in some instances, the pains being excessive, the patient having very marked pyrexia, and in one patient the reaction was so profound that it took him about a month to recover. One cannot expect in this disease to cure what has already been destroyed, but it is possible to prevent further active inflammation, at least so far as those pathologic processes are concerned which are the result of the treponeme located within the vessels and meninges.

In paresis my results have not been good, but as has been previously stated, it is impossible in early paresis to make a differential diagnosis from cerebral syphilis. Therefore it is important to institute prompt and vigorous treatment in all early cases. I have a striking example under my care at the present time. This patient, a young man about 37, who had a specific infection about eight years ago, manifested early paretic symptoms last summer. He became emotional and difficult to manage, and had almost rigid pupils, paretic speech, lost reflexes and typical serologic findings, that is, a strongly marked Wassermann in the serum and fluid, a cell count of 80 and globulin excess. He has been given so far sixteen intravenous injections and six Swift-Ellis treatments. At the present time his cell count and globulin are normal, the serum Wassermann is negative, but the fluid reaction is still positive. The patient is apparently in as good mental condition as he has been in a number of years, yet the fact that the fluid Wassermann persists is indicative that the treponemes are still active within the nervous tissue, and the chances are that the patient has brain syphilis and not paresis, for if the latter were the case the probabilities are that the Wassermann would have been positive in both the serum and fluid. Whatever benefits have resulted from treatment are due to the healing up of the meningeal and vascular processes, but we have not been able to reach the treponemes within the nervous structure. It may be that this is a case of paresis in which this exceptionally vigorous treatment has brought about these results.

In this case I have seen what I have always doubted; the pupils at first were almost rigid; now they react very promptly. Nonne reports similar observations in four cases.

I have used the direct injection of neosalvarsan in the spinal canal. In one instance it was given for me in a case of general paresis, and the reaction was milder than in some of the Swift-Ellis injections previously given. A subsequent injection in the same patient caused his death within forty-eight hours. As a consequence, I am afraid of this method and have not used it since. I have had no experience with the mercurial injection into the spinal canal as practiced by Byrns of Baltimore.

As I have tried to emphasize in the early part of my paper, it is as important for the welfare of the patient to know when not to institute treatment. In a patient in whom the cell count is small and the Wassermann reaction is either faintly positive or negative in the cerebrospinal fluid, the Swift-Ellis method should never be employed, although salvarsan may be given intravenously a number of times, but the effects should be carefully watched, and if the patient does not react well, this treatment should cease. If, on the other hand, the patient improves, the treatment should be kept up. For example, in the tabetic previously mentioned, in whom there have been no active symptoms for thirty-five years, the cell count was thirteen and the fluid Wassermann

negative, but the serum Wassermann was faintly positive. This patient suddenly developed shooting pains in his chest which, as demonstrated by the clinical symptoms and Roentgen ray, were due to a necrosis of the thoracic vertebrae and impingement of the posterior roots. Intravenous injection of salvarsan caused cessation of the pain. Three injections were given with good results. In such a patient it would have been unwise to give more vigorous treatment or spinal canal injections.

In the cerebral arterial cases already referred to, in which there is sometimes a history of syphilis, and in which the serologic findings are sometimes entirely negative, I find that mercurial treatment is much better than salvarsan. In these patients weekly injections of a grain of salicylate of mercury in the upper outer part of the buttock is of the greatest benefit. Occasionally I advise the giving of salvarsan in moderate doses, but this should be carefully watched, and if any untoward results occur should not be repeated.

In conclusion, I wish to emphasize the efficacy of early and intensive salvarsan treatment. It should be the aim of the physician to eradicate or to stop the active syphilitic process within four or five months, if such a thing is possible. Further, the deaths that have resulted from this treatment, in my opinion, are due to the careless handling of the patients, and if physicians would insist on their patients remaining in bed at least over night after an intravenous injection, no bad results would be obtained. Besides that, one should take the precaution to keep the patient in bed over night after lumbar puncture. I have seen some disastrous results in patients who were allowed to walk immediately after lumbar puncture.

I have not detailed the serologic findings in the cases in which these observations were made, feeling that the general results were, after all, the most important. The laboratory work has been done for me chiefly by my assistant, Dr. P. DeLong, and also by Dr. E. P. Corson-White, and most of the treatments by the former under my direction.

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INVOLVEMENT OF THE NERVOUS SYSTEM DURING THE PRIMARY STAGE OF SYPHILIS

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In a recent publication,[1] we set forth the results of our findings with respect to the early involvement of the nervous system in secondary syphilis. In the paper referred to, it was found that between 60 and 70 per cent. of all cases of syphilis which progress to the secondary period show some change in the spinal fluid indicative of participation of the nervous system. These studies are being continued, and we now feel that our figures at that time were conservative and that in all probability every case of syphilis which reaches the secondary period has more or less involvement of the cerebrospinal axis. Certainly, in each case, the brain, cord and meninges, together with the other systems, receive their quota of the treponeme from the blood stream.

In the continuation of our studies, we have had the opportunity of studying a number of cases of syphilis in the primary stage, that is to say, syphilis in which, of the clinical manifestations, only the chancre was present. Similar studies have also been made in the late literature by Wechselmann,[2] M. Fraenkel,[3] Leopold,[4] Knick and Zaloziecki,[5] and Altmann and Dreyfus.[6]

Wechselmann[2] reports six cases of primary syphilis in which there were positive findings in the cerebrospinal fluid. In but three of these cases were there any subjective symptoms referable to the nervous system. Two had headache, and in one there was facial palsy. In the second volume of his classic work on "Die Behandlung der Syphilis mit Dioxydiamidoarsenobenzol," Wechselmann places himself on record as believing that even as early as the primary period, or as he states it, in the preroseolar period, the large lymph spaces of the central nervous system are the site of specific infection, together with characteristic changes in the spinal fluid.

M. Fraenkel[3] investigated two cases in which the chancre alone was present. In both cases the cerebrospinal fluid, as well as objective neurologic findings were negative. In the thirteen remaining cases reported by him, the syphilis had progressed to the secondary period, and these cases are therefore not considered here.

The largest number of cases of primary syphilis which have been studied with reference to the possible involvement of the nervous system are reported in a monograph by Leopold.[4] This investigator reported his results in sixty-seven cases of which, however, but sixteen were cases in which the chancre alone was present. In six of these cases he was able to demonstrate changes in both the fluid and in the nervous system itself. In seven, a careful examination of the central nervous system showed a suggestive evidence of involvement with little or no change in the fluid. In three cases there was no change in either the fluid or the nervous system. The subjective and objective findings described were: changes in sensibility, increased reflexes, particularly on one side, positive Babinski, headache, Romberg, inequality of pupils and differences in pupillary reaction.

Knick and Zaloziecki,[5] in a study of the involvement of the eighth nerve in early syphilis, report a positive finding in one case of primary syphilis, together with very definite changes in the spinal fluid. This, however, occurred following an injection of salvarsan, and therefore may be regarded as in the nature of a Herxheimer reaction, and as such should perhaps be separated from the cases under discussion in this paper.

1. Wile and Stokes: A Study of the Spinal Fluid with Reference to Involvement of the Nervous System in Secondary Syphilis, Jour. Cutan. Dis., September, 1914, p. 607.

2. Wechselmann: Ueber intralumbaler Injektion von Neosalvarsan, Deutsch. med. Wchnschr., 1912, No. 31, p. 1446.

3. Fraenkel: Ueber das Vorkommen der Wassermann Reaction im Liquor Cerebrospinalis bei Fällen von frischer primärer u. secundärer Syphilis, Ztschr. f. ges. Neurol. u. Psychiat., 1912, No. 11, p. 1.

4. Leopold: Ueber nerven Symptome bei frischer Syphilis, Arch. f. Dermat. u. Syph., 1914, cxx, 101.

5. Knick and Zaloziecki: Ueber Acusticuserkrankungen im Frühstadium der Lues . . . mit spezieller Berücksichtigung der Liquoruntersuchung, Berl. klin. Wchnschr., 1912, No. 14, pp. 639, 693.

6. Altmann and Dreyfus: Salvarsan im Liquor Cerebrospinalis bei Frühsyphilis nebst Ergänzenden liquoruntersuchungen in der Latenzzeit, München. med. Wchnschr., 1913, Nos. 9 and 10, pp. 464 and 530.

Altmann and Dreyfus[6] had the opportunity of studying the cerebrospinal fluid in eight cases of syphilis in the primary stage. Of this number, two showed changes in the fluid indicative of central nervous involvement.

During the past year, we have been able to study six cases of primary syphilis, in all of which careful examinations were made with respect to the nervous system, including an examination of the fundus oculi and of the auditory nerve. Such examinations were made in conjunction with carefully made spinal punctures.

MATERIAL AND METHODS

Since the publication of our previous paper on early involvement of the central nervous system in syphilis, the routine puncture of all syphilitics has been undertaken in this clinic. In this connection it has been possible to make a careful study of six primary cases presenting lesions in which no signs of the generalization of the infection, as manifested in the skin or mucous membranes, had as yet appeared. The difficulty of persuading such patients, as yet unimpressed with the seriousness of their condition, to remain in the hospital sufficiently long for the necessary examinations explains the smallness of the number reported.

The methods employed in the study of these cases are essentially the same as those outlined in our previous communication. Each patient was subjected to a thorough examination of the fundus oculi through the courtesy of Professor Parker. In the same way, the condition of the eighth nerve was examined through the courtesy of Professor Canfield. Professor Camp very kindly carried out a neurologic examination of each case. Lumbar puncture was performed in five of the cases, and attempted in the sixth, but owing to a scoliosis and the patient's refusal to cooperate, the canal could not be entered. The cell counts were made after the method of one of us (J. H. S.), by staining with polychrome methylene blue, 1 drop being added to 2 c.c. of the fluid, and the count being made after the lymphocytes had taken the stain. Nonne-Apelt determinations of the albumin and globulin content were made in four cases, simple boiling in the other two. For the purposes of this report, the cases are abstracted under the following items: First, age of the primary lesion. This represents the portion of the stage of secondary incubation elapsed in each case before our investigations were made. Second, adenopathy. This was noted as a possible early index of the generalization of the infection. Subjective symptoms, prior treatment and general health were then considered. The neurologic examination scheme included the deep reflexes, pupils, extra-ocular palsies, paralyses, Romberg and Babinski signs, gait, sensory changes and miscellaneous signs such as the Kernig signs and stiffness of the neck. Cells, albumin determination and Wassermann reactions were done on the spinal fluids. A Wassermann on the blood was also taken in all but one case.

CASE REPORTS

The following brief summaries of the cases studied are here presented in advance of the itemized statement of the findings:

Case 1.—D. C., man, aged 23 years, whose family and past history were unimportant, reported that a papule developed two weeks *post coitu*, and had been present for six weeks when he entered. Patient had had one month of indifferent and irregular treatment with pills. The general health was unimpaired, and there were no signs of eruption, mouth or throat lesions or constitutional involvement. Examination showed a morphologically typical primary lesion on the glans penis with marked satellite adenopathy but no recognizable general lymphatic involvement. There were no secondary manifestations. The *Treponema pallidum* was no longer demonstrable in lymph from the primary sore. The fundus was negative except for beginning arteriosclerotic changes, the eighth nerve slightly involved, general neurologic examination negative throughout, puncture unsuccessful, Wassermann on the blood positive.

Case 2.—N. S., man, aged 24, with unimportant family and past history, and excellent habits as regards alcohol and tobacco, had a double primary lesion with complicating Ducrey infection, of five weeks' duration. His health was unaffected, and there were no signs of generalization except a general adenopathy, well marked. Examination showed an erosive balanitis with two indurated plaques in the foreskin. There were pipe-stem lymphangitis of the dorsum of the penis, and bilateral satellite bubo. No previous treatment had been given. The fundus showed a definite neuroretinitis. The eighth nerve was negative. General neurologic examination was negative. Puncture showed a fluid with a cell count of 7, positive albumin on boiling and a plus-minus Wassermann reaction. The Wassermann reaction on the blood was strongly positive. Violent headache for a week followed puncture. A very vigorous salvarsan-mercury treatment was undertaken, with rapid improvement in the local condition, and entire suppression of secondary manifestations.

Case 3.—T. F., man, aged 37, with unimportant family and past history, reported that the lesion had developed on the penis four days *post coitu* and had been present for five weeks. Induration and inguinal adenopathy had been noticed for the past ten days only. No treatment had been received. The general health was unimpaired. On examination, the lesion presented the picture of a hunterian induration developing on the border of a deeply eroding chancroid. Dark-field examination demonstrated an abundance of typical *Treponemata pallida*. There were no other skin or mucous membrane lesions. Adenopathy was local only. Fundus examination showed a definite neuroretinitis. The eighth nerve was negative. Knee and Achilles reflexes were increased and the station was uncertain in the Romberg test. Puncture showed 5 cells per cubic millimeter, a negative albumin test (boiling) and a positive Wassermann. There was no reaction to the puncture. Wassermann on the blood was positive.

Case 4.—C. J. D., man, aged 38, with negative family history, is a heavy drinker. A large indurated primary lesion with secondary balanitis developed three weeks *post coitu*. Duration of primary lesion was four weeks. Only local treatment had been given. There were no general symptons, headache, etc. Patient had, however, noticed a marked exaggeration of his unusual nervousness. Examination disclosed a complete phimosis, the foreskin boardlike and rigid near the frenum. There was pipe-stem lymphangitis on the dorsum of the penis, and marked inguinal, but no general, adenopathy. Numerous *Treponemata pallida* were demonstrated by dark field in lymph aspirated from the base of the chancre. The fundus oculi showed arteriosclerotic changes with neuroretinitis, and the eighth nerve was involved. Pupils were sluggish and unequal, knee and Achilles jerks increased, Romberg positive. Puncture yielded a fluid with 200 cells per cubic millimeter, Nonne-Apelt was positive in a dilution 1:4, and Wassermann on the spinal fluid was negative. The blood for the Wassermann reaction was accidentally lost.

Case 5.—L. W., man, aged 22, with unimportant family and past history, had noticed the primary lesion a week before entry. The primary incubation period is somewhat indefinite but was apparently about five weeks. There were no secondary manifestations, subjective or objective. Adenopathy was local. The primary lesion consisted of a small superficial eroded plaque on the corona near the frenum.

The lesion had scarcely attracted the patient's attention. *Treponema pallidum* was demonstrated by dark field, in large numbers. Fundus examination showed a low-grade neuroretinitis with early choroidal changes. The eighth nerve was negative. Knee and Achilles reflexes were increased and the patient had lost the localizing sense in the toes. Lumbar puncture showed a fluid with 15 cells per cubic millimeter, a Nonne-Apelt positive 1:1 and albumin positive on boiling. Wassermann was negative on the fluid. The blood was Wassermann positive. Patient suffered a severe reaction from the puncture.

CASE 6.—N. J., man, aged 20, with family history negative, had good habits as regards alcohol and tobacco. The exact incubation period was not known, but did not exceed three weeks. There were no subjective symptoms and no cutaneous manifestations, but considerable pallor and a general adenopathy with a remarkably large bilateral satellite bubo. The primary lesion was perfectly typical, small and seated on the foreskin. The *Treponema pallidum* was demonstrated by dark field. Fundus examination showed a mild neuroretinitis, examination of the acoustic apparatus a definitely decreased bone conduction. Neurologic examination was negative. Lumbar puncture yielded a spinal fluid with 5 cells per cubic millimeter. Nonne-Apelt was negative. Wassermann was negative. There was a severe reaction to the puncture. Wassermann on the blood was positive.

This case exhibited very definitely an early involvement of the nervous system in which there was as yet no meningeal reaction detectable by changes in the spinal fluid.

SUMMARY AND FINDINGS

Of the six cases thus reported, none can be rated as entirely normal in all the particulars of the examination. The nearest approach to normal was Case 1, which exhibited only slight involvement of the eighth nerve, and it is of interest that this is the only case in which treatment, even though only the relatively inefficient administration of pills, had been instituted. The entire lack of all subjective symptoms such as headache, malaise, nocturnal pains or nervous irritability in the series, is noticeable.

The duration of the secondary incubation period up to the time of examination averaged five weeks in four of the cases. In one of the cases, the inconspicuousness of the lesion made its age a matter of uncertainty, and in another, the patient was ignorant and unobserving. Here, too, it is interesting to see the sinister possibilities of the inconspicuous or unrecognized primary lesion, illustrated by the fact that the former case was one of the most definitely positive, from the point of view of central nervous involvement, in the series.

Palpable general adenopathy would seem also to be unreliable here as a test of the generalization of the infection from the primary source. So far as could be detected, a general adenopathy was present in only two of the six cases (2 and 6).

In our previous communication, attention was directed to the sensitiveness of the optic nerve as an index to central nervous involvement. In this series of six cases in the secondary incubation period of the disease, spread of the infection from the primary source would seem to have occurred in advance of frank cutaneous or systemic signs of the extension. In five, there was a neuroretinitis; early choroidal changes had occurred also in one case, and arteriosclerosis, possibly alcoholic, in another.

Auditory nerve involvement was well marked in one case with negative fluid, was slight in degree in two cases and had not occurred at all in three.

Positive neurologic findings were present in three out of the six cases. In all three the deep reflexes of the lower extremities were exaggerated. In two, the station in the Romberg test was affected (Cases 3 and 4). In the case of the alcoholic, the pupils were sluggish, and unequal. Case 5 showed a sensory disturbance in the toes.

The findings in the cerebrospinal fluid constitute the most tangible evidence available of the fact that meningeal reaction to syphilitic infection in the so-called secondary incubation period had already occurred well in advance of any of the more obvious and familiar signs of dissemination. Four of the fluids examined presented some abnormality. The cell count was above the normal in two (Cases 4 and 5). Special attention is directed to the remarkable pleocytosis in Case 4 (200 cells). The predisposing influence of chronic alcoholism may deserve consideration in explaining this high count. The albumin and globulin content was definitely increased in three out of four cases, the increase being most marked in association with the pleocytosis, and reaching its maximum in the alcoholic patient (Case 4). The Wassermann reaction, on the other hand, was the least sensitive index in the series, being a doubtful positive in two and a flat negative in three of the latter cases exhibiting the most striking changes in cells and globulin. The occurrence of any one of these three changes, independent of the other two, in the spinal fluid in syphilis is well illustrated by this series, and corroborates the findings in our previous study.

The Wassermann reaction on the blood was already positive in the five cases examined, and there is little reason to doubt that it would have been positive in the remaining one.

From our studies and from those of others cited above, we are inclined to the belief that actual involvement of the cerebrospinal axis may be present without any of the changes in the spinal fluid so generally accepted as criteria of central nervous involvement. These changes, however, are probably slight and for the most part, as stated in our recent publication, transitory, similar to the roseola which occurs on the skin. That they may, and not infrequently do, precede the secondary skin and mucous membrane eruptions, is now an established fact.

It is generally accepted that involvement of the meninges is paralleled by a pleocytosis in the spinal fluid. The cases, then, in which there is central nervous involvement without obvious changes in the cerebrospinal fluid are probably in the nature of involvement of the nerve tissue itself, rather than of the meninges.

The presence of the positive Wassermann in the fluid, or of the increased lymphocytic count, or of the increase in organic solids as indicated by the Nonne-Apelt and boiling tests for albumin, while they may be considered as delicate tests, are nevertheless arbitrary and not constantly present in syphilitic disease. Any one of the three may be present independently of the other two. The presence of any of these three does not necessarily mean that they mark the initial stage of central nervous change. A slight change in the cerebrospinal axis may be sufficient to give rise to clinical evidence of involvement, and yet such change may be insufficient to cause, at the time of puncture, a definite change in the cerebrospinal fluid. Obviously, a negative test in the cerebrospinal fluid is therefore only of value in negating the presence of involvement, in the entire absence of clinical symptoms as determined by careful examination of the nervous system

itself. As was mentioned, seven of Leopold's cases showed a definite involvement of the nervous system with such symptoms as positive Romberg, Babinski, increased reflexes on one or both sides, and changes in sensibility without any change demonstrable in the spinal fluid at the time of puncture.

We should like to advance the possible theory that the time of puncture in a given case may have considerable to do with the positive changes present, it being a well known fact in general paresis, for example, that frequent punctures in such cases undergoing no treatment show a great variability in the objective findings. It is possible, therefore, that in a case with definite nerve changes and without spinal fluid changes, the latter might well be present at a subsequent puncture without increase of clinical signs present.

CONCLUSIONS

1. The nervous system may be and probably is frequently involved before there are other evidences of the hematogenous spread of the *Treponema pallidum* from the site of the initial sore.

2. Such involvement may be slight as far as clinical symptoms go, and may not be accompanied by changes in the spinal fluid, as measured by our present methods.

3. Serious involvement, however, may occur extremely early with very marked changes in the cerebrospinal fluid, and with definite impairment of nervous function.

4. The clinical changes most commonly noted in this preroseolar period are: headache, involvement of the second and eighth nerves, and increased reflexes. Of these, the headache is most commonly associated with demonstrable changes in the spinal fluid.

5. Absence of any of the three accepted criteria of nervous system involvement in the spinal fluid can be accepted as negating the presence of syphilis of the brain, meninges or cord only when a careful examination fails to reveal any symptoms pointing to involvement.

THE TREATMENT OF INTESTINAL AMEBIASIS

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The field of "amebic dysentery" and its treatment has been so intelligently covered by recent investigations and reports that I feel considerable reluctance in reporting my small experience in the use of amebicides.

Recently I have found my resistance weakening by having read several articles lauding one single drug as the therapeutic agent in the successful treatment of amebiasis.

Amebiasis is one of the many diseases, which, because of its intestinal complications and sequelae, presents a protean symptomatology. Although the work of Strong and others has given a much more comprehensive knowledge of amebiasis, there still exists considerable confusion in the interpretation of symptoms and signs leading to an accurate diagnosis and prognosis. As has been substantiated, amebiasis may exist in a mild or even advanced form without dysentery, and dysentery may persist for months or years after amebic ulceration without amebiasis. Nothing has been more convincing of the existence of amebiasis without dysentery than my observation of five cases of hepatic abscess of amebic origin, in four of which there was no history obtainable of dysentery at any time preceding hospital residence for liver abscess. In all four, intestinal amebiasis did exist, and in none did dysentery occur after operation. As to dysentery after amebiasis: it has been my experience that after apparent cure of amebic dysentery, diarrhea, abdominal pain, tenesmus, tympanites and distention, with disturbances of digestion incident to colonic dyscrasiae, persist for months or years after the disappearance of *Entamoeba histolytica*.

During my service at the department hospital, Manila, P. I., I observed, while assistant to Captain L. L. Smith, on the medical service, a case of perforation which at necropsy showed typical amebic ulcerations and gangrene of colon. This case gave no history of dysentery and had no diarrhea preceding or following perforation.

DRUG TREATMENT

Advances in the treatment of intestinal amebiasis by drugs has been along scientific lines, and there is no doubt that we have in ipecac and its alkaloid the drug par excellence as an amebicide.

Ipecac has been successfully used in English and American practice (in the tropics), and Rogers, after Vedder's experiments with ipecac and emetin (alkaloid), applied the alkaloid to treatment. Since then emetin has been the drug of choice because of the ease with which it is administered and the absence of the emetic manifestations on the patient of large doses of ipecacuanha. Emetin is one of the most valuable agents we have in the treatment of intestinal amebiasis, but it has been my experience that hypodermics of emetin hydrochlorid alone will not cure amebic dysentery.

My experience covers fifty cases observed during my tour of duty in the Philippine Islands, and the results of treatment have been uniform.

I am convinced that emetin hydrochlorid, while a valuable amebicide, if used alone will not cure amebic dysentery and that relapses will soon occur. The same statement is equally true of ipecac used alone. After an experience with each of these drugs used alone I have reached the conclusion that emetin given by hypodermic, accompanied or followed by the use of ipecacuanha by mouth, will cure most cases of intestinal amebiasis.

This combination of treatment was first used successfully without a consideration of its rationale, based on the pathology of the disease and the therapeutic influence of the drugs. Later the happy results of this combination seemed to be justified by the character of the lesions. It would seem that emetin hydrochlorid would be amebicidic to those entamebas which were in contact with the blood stream, that is, those deep in the ulceration, but would have but little effect on those in the intestinal canal or the edges of the ulcerations. The reverse is true of ipecac; the drug given by mouth (by its emetin content) destroying the entamebas in the intestinal canal or outer margins of the ulcerations but not penetrating deeply into the irregular excavations.

Ipecac has the disadvantage of producing nausea and vomiting, but it has been my experience that emetin hydrochlorid after several administrations produces a tolerance to ipecac which markedly lessens or prevents the disagreeable effects of ipecacuanha.

The method of administration used at the department hospital, Manila, P. I., was as follows:

Emetin hydrochlorid 0.008 gm. by hypodermic for ten days (twice a day for four days and once a day for six days). Ipecac started about the eighth day with from 1.5 to 2 gm. doses given at bedtime, continued for three consecutive nights and thereafter decreased by 0.3 gm. each consecutive night. The disagreeable effects of the ipecacuanha were never manifested. It is quite necessary to precede the administration of ipecacuanha by tinctura opii in from 0.6 to 1 gm. doses.

Happy though the results of this combination may be in treating amebiasis, the fact should not be overlooked that emetin is an amebicide and has little to do with the healing of ulcerations. Every case of amebiasis should, after this treatment, be considered one of ulcerative colitis and so treated from a dietetic point of view. At the same time every effort should be made to enhance resistance by change of climate, tonics, etc., to obviate the distressing sequelae characteristic of the disease.

UNUSUAL CASE OF SINUS THROMBOSIS

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MEDICAL NOTES, BY DR. HEIMAN

Thrombosis of the lateral sinus subsequent to acute otitis media is not uncommon. It usually gives definite signs and symptoms, is accompanied by a positive blood culture and is readily diagnosed. The following case, however, from the pediatric department of Dr. Koplik in Mount Sinai Hospital, in which the patient was seen during my summer service, transferred to the otologic service of Dr. Whiting and operated on by Dr. Ballin, is deemed worthy of special mention on account of several unusual features, namely:

1. The difficulty of diagnosis.
2. The blood culture results.
3. The finding of bacteria in the blood by means of smears.
4. The continuance of the septic temperature for weeks after the removal of the thrombus.

M. S., boy, aged 8½ years, had had measles and whooping cough in early childhood. Three weeks before admission he had been treated for a left-sided pneumonia complicated by bilateral otitis media. Paracentesis of both ears had been performed. Seven days prior to admission the patient apparently had entirely recovered; there was no cough, ear discharge or fever. Two days preceding admission, the child complained of headache, and the temperature rose to 102 F., followed next day by chills, sweats and a temperature of from 105 to 106. There was no ear complaint or ear discharge. On admission, July 14, the child seemed apathetic; there were no signs of meningitis, typhoid or pneumonia; there was slight congestion of the right ear drum but no mastoid tenderness.

Up to the time of transfer to the otologic service, the patient had a distinctly septic type of temperature ranging from 100 to 106.8 F., the daily rises occurring between 8 and 12 p. m., and being accompanied by chills and profuse sweats. Numerous blood counts showed a leukocytosis ranging from 15,000 to 41,000, with a polynucleosis averaging about 75 per cent. Examinations of the blood for malarial plasmodia were repeatedly negative. The urine never contained pus cells. The Widal test was persistently negative. A blood culture taken on July 16 by Dr. Rosenson of the pathologic department failed to show a bacteriemia.

The most important clinical notes on the progress of the case for the first ten days follow:

July 15: Spleen felt just below free border of ribs.

July 16: Dulness with diminished breathing at right base posteriorly.

July 18: Exploratory right myringotomy by Dr. Ballin. Accessory sinus examination, also by Dr. Ballin, negative.

July 19: No discharge from paracentesis wound. Spleen increasing in size. Two chills in past two days. Roentgen ray shows lungs clear. Von Pirquet negative.

July 20: Paracentesis thoracis, right scapular line, negative.

July 22: Numerous crepitant râles at bottom of right axilla with slight dulness.

July 24: Examination of ears negative.

July 24, a second blood culture was taken by Dr. Piller. At 9:30 p. m., while the temperature was at its maximum, 106.8, a smear of the blood, taken with strict aseptic precautions by Dr. Morris Kush, one of the interns, stained with filtered Gram's stain, and controlled by a spread taken from his own blood, showed many Gram-positive cocci, single, in pairs, and in short chains, suggestive of streptococci. The blood culture reported next day showed the *Streptococcus hemolyticus*. The patient was immediately transfered to the otologic service for operation, with the diagnosis of right lateral sinus thrombosis.

Although the history and course of this case suggested an otologic origin, a definite diagnosis of lateral sinus thrombosis, in the absence of a positive blood culture, was practically impossible. Acute pyelitis, malaria and typhoid fever were all excluded, and yet before the result of the blood culture, it was not considered justifiable to attempt operation for only a suspected sinus disease.

The blood culture taken one day before operation was positive; one taken a few hours before operation, negative. The result of the latter culture may be explained on the generally accepted theory that, in a case of bacteriemia of pyogenic origin in which there is a distinct focus of pus, bacteria may be disseminated into the blood stream from the original focus, only at certain intervals, these crises manifesting themselves clinically by chills, sweats and a very high temperature. In these cases, bacteria may sometimes be demonstrated only at the height of the temperature. Dr. Libman[1] has given various other causes for the occurrence of negative blood cultures in these cases.

The third unusual feature, the finding of bacteria in the blood smear, deserves a word of comment. Fried and Sophian[2] found that bacteria could be demonstrated, by their procedure in 97 per cent. of cases in which the blood culture was positive, and in a few cases in which the blood culture was negative. Their method is rendered more reliable than the one employed above, because of the filtration of all their staining materials through a Berkefeld filter. It can be performed in a short time, whereas the blood culture cannot as a rule be reported definitely in less than twelve hours, at least. The time-saving factor in cases similar to the one cited is extremely valuable; the sooner the diagnosis, the earlier the operation; the earlier the operation and the removal of the bacteria-disseminating focus, the greater the chances of recovery. There is very little doubt, therefore, of the value of blood-smear examinations in cases of suspected sinus thrombosis.

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1. Libman, E.: A Further Communication on the Importance of Blood Cultures in the Study of Infections of Otitic Origin, Tr. Ninth Internat. Cong., Boston, Aug. 12-17, 1912.
2. Fried, G. A., and Sophian, A.: Investigations Concerning the Value of the Microscopic Examination of the Blood for Bacteria, Am. Jour. Med. Sc., 1911, cxlii, 88.

The fourth unusual feature, the continuance of the septic temperature after operation, will be commented on by Dr. Ballin in his report of the surgical phase of this case.

SURGICAL NOTES, BY DR. BALLIN

From the foregoing history, it is readily observed that the supposition, that the focal infection giving rise to symptoms of a general septicemia had its origin in the sigmoid sinus, was based entirely on the laboratory findings of the blood.

July 16: Five days after the patient's admission into the hospital, an aural examination was requested. I found the patient somewhat apathetic and drowsy, and lying quietly in bed apparently displaying little interest in the things going on about him. He did not complain of pain or distress of any nature. Examination of the ears revealed an absolutely normal condition of the left drum and mastoid region. The right drum was slightly reddened in the posterior, superior quadrant, but not bulging. There was no aural discharge of any nature. Hearing was not in the least impaired. Deep pressure exerted over the mastoids and along the course of the jugular veins did not elicit the slightest pain. There was no rigidity of the neck or any other sign of meningeal irritation. There were no symptoms indicative of a labyrinthine involvement, no nystagmus or disturbance in coordination. Examination of the eyes was negative. In other words, there were no clinical aural manifestations which could be held accountable for the septic condition of the patient.

July 18: Two days later, I was called on to make another aural examination, and found the same conditions present. As the slight redness in the right drum still persisted, I decided to make an exploratory paracentesis to ascertain whether there was perhaps some secretion retained in the epitympanic space. Examination on the following day revealed merely a small linear incision covered with a small hemorrhagic clot, but nothing more.

July 24, that is, ten days after admission, all factors having been excluded which could be held accountable for the general septic condition of the patient, a history of a previous double otitic suppuration, although of a mild nature and only of a week's duration, and the finding of a positive blood smear and blood culture, as Dr. Heiman mentioned above, permitted the tentative diagnosis of a sinus thrombosis. The patient was thereupon transferred to the ear service of Dr. F. Whiting for exploratory operative interference.

Although there were evidences of a marked sepsis, the general condition of the patient was excellent. The temperature on the day previous to operation reached 106.5, falling again to 99.5 the following day. The pulse ranged from 115 to 94, and respiration from 20 to 28. The blood count showed: white blood cells, 41,000; polymorphonuclears, 62 per cent.; lymphocytes, 38 per cent. The aural condition had not changed. No tenderness or pain had developed over the mastoids or jugular regions. There were no glandular enlargements or pain in the throat on swallowing. In other words, there were no active aural manifestations except the slight redness of the right drum.

As this was therefore the only factor which could be looked on as indicative of a latent otitic complication, and as an exploratory procedure was imperative, it appeared most expedient to expose the corresponding mastoid bone and lateral sinus.

RIGHT MASTOIDECTOMY, CURETTAGE OF THE SIGMOID SINUS, AND EXCISION OF THE JUGULAR VEIN

The patient was prepared in the usual manner. The mastoid was incised, and the periosteum, which was very adherent, pushed back. The bone was chiseled away and found to be exceedingly hard, in fact somewhat ebonized. There was no destructive process evident, so that the entire mastoid appeared normal. As the antrum was approached from the rear, a large quantity of pus was evacuated. This seemed to be so completely shut off from the tympanic cavity through the formation of granulation tissue, that one could now readily understand why the paracentesis, performed some days before, was not followed by any suppurative discharge. The bone over the sinus, which was also apparently sound, was then removed down to the bulb and backward for a distance of about 2 inches. There were no granulations or erosions on the sinus wall, but the sinus itself appeared somewhat discolored. It felt more tense than usual, and palpation revealed an increased transmitted pulsation. To ascertain the nature of its contents, I decided to aspirate, and to my astonishment withdrew a large quantity of pus.

Being thus assured that we were dealing with a suppurative process in the sinus, it was tamponed above and below and incised. In it were found a large quantity of pus and a well-organized parietal thrombus, which had the appearance of a solid cord completely obliterating the lumen of the vessel. Later bacteriologic examination of this clot and pus showed the presence of a large number of hemolytic streptococci, similar to those found in the blood smear and culture.

The sinus was not curetted at once, but packed temporarily. I then resected the internal jugular, and a part of the facial veins. The vein appeared full, and, as a subsequent microscopic examination showed, had not undergone any marked pathologic changes. It was excised from a point above the entrance of the common facial vein down to the clavicle. A portion of the facial vein was likewise resected.

The skin was sutured and a rubber tube drain introduced. Having done this, our attention was again directed to the sinus. The previous incision was enlarged, and with a small curet the thrombus was removed in the direction of the bulb, whereupon a large quantity of pus welled up. In like manner we curetted backward, where a similar condition was found. The entire contents, as it appeared, having thus been removed, the tampons were gently removed, whereupon a free flow of clear blood ensued from both ends. The wound was then firmly packed and dressings applied.

The condition of the patient after this operation was very good. The blood culture taken one-half hour before operation was reported negative. Another culture taken one and one-half hours after operation was also negative.

For the following two days the temperature remained below 100; there were no chills and no subjective complaints. On the third day, July 28, the temperature rose suddenly to 103, accompanied by chills. There were no heart or lung complications and no embolic phenomena. The patient complained of pain in his left ear, and the mastoid appeared somewhat sensitive. Examination of the drum showed a slight redness. There were a slight rigidity of the neck and a Babinski on the left side.

Another blood culture was reported negative. Blood count showed: white blood cells, 11,500; polymorphonuclears, 64 per cent.; lymphocytes, 36 per cent.

July 28: The wounds were dressed and found clean.

July 29: The dressings were changed; there was a slight swelling under the angle of the jaw due to retention of pus, which was expressed. The temperature ranged between 99 and 101.5.

July 31: The symptoms in the left ear and mastoid subsided. The wound in the neck was beginning to heal. The mastoid wound was covered with healthy granulations.

August 4: The eyes examined by Dr. Wolff showed a moderate choked disk. The patient became somewhat more apathetic and drowsy; he complained of feeling cold, and the temperature rose suddenly to 103. There was a slight cough, but examination showed that the lungs were clear. The veins of the scalp appeared prominent. There were no apparent signs of meningitis. The color was rather pale. Examination of the throat was negative. The heart action was rapid and irregular. There was a systolic murmur over the pulmonic area, and the second sound was reduplicated. The spleen was felt one finger below the ribs.

Blood culture taken at this time was reported positive and again showed the presence of hemolytic streptococci. Blood count was: white blood cells, 17,600; polymorphonuclears, 84 per cent; lymphocytes, 16 per cent.

The reappearance of the positive culture could be explained in two ways: first, that there was still some septic focus in

the side previously operated on which had not been entirely removed, and secondly that there was, perhaps, a sinus involvement in the ear which had not been operated on, in spite of the fact that all clinical manifestations pointing in that direction were wanting. One of the pediatrists and the internists were inclined toward the latter view, basing their opinions on the fact that an almost similar condition existed in the other ear prior to operation, and thought that an exploratory procedure was indicated. I did not believe that the ear which had not been operated on was the cause of any trouble, and consequently did not feel justified in exploring this side.

After some hesitancy, however, it was finally decided to lay open again the sinus previously operated on, more freely, to see whether there was still another septic focus which perhaps could be held accountable for the return of the positive blood culture.

EXPLORATION OF THE RIGHT SIGMOID SINUS

August 5, the wound was reopened and the sinus exposed, whereupon only a mild bleeding ensued. The bone was removed far back toward the torcular, following the course of the sinus. A small curet was gently introduced into the lumen of the vessel, and with this as a grooved director, the sinus wall was incised for a distance of about 2 inches, whereupon a gush of blood ensued. There was no pus or purulent thrombus found.

As the jugular vein had been resected at the previous operation, thus cutting off the portal of entry into the circulation, and as the bulbar end of the sinus seemed to be apparently clean, it was not touched.

The wound was again packed and dressing applied.

The temperature dropped to 100 after the operation. The following day the patient was removed to the open roof pavilion, where he was kept during the remainder of his illness. On this date he felt cold, and the temperature suddenly rose again to 104.8.

Examination of the thorax revealed a small area of dulness in the second left intercostal space; there were some fine crepital rales and a slight cough which persisted for a few days.

The spleen could be felt two fingers below the costal margin.

Blood count revealed: white blood cells, 21,000; polymorphonuclears, 76 per cent.; lymphocytes, 24 per cent.

Blood culture taken this time was again reported positive. The temperature ranged between 99 and 103.5, the pulse between 116 and 120. The respiration was from 26 to 28.

From the report of the last blood culture it was evident that the patient still had a bacteriemia. As the right sinus had been exposed freely, and its contents evacuated as thoroughly as possible, it no longer seemed probable that a septic focus still existed on this side which could be held accountable for this condition.

Feeling that I could reasonably exclude this side, and that perhaps the left sinus was the seat of another septic focus, I reluctantly decided to explore it in spite of the fact that there were absolutely no aural manifestations of any nature which warranted such an operative procedure.

EXPLORATORY MASTOIDECTOMY AND ASPIRATION OF LEFT SIGMOID SINUS

August 6, the mastoid was opened and found absolutely normal. The sinus was exposed for about 2 inches, and showed no evidences of any pathologic changes. With a fine needle, the sinus was aspirated and only pure blood obtained. As the needle was withdrawn a free gush of blood ensued, which was readily controlled by tamponing. The mastoid wound was packed, the skin sutured and dressing applied.

Following this operation, the temperature continued to rise and fall sharply, ranging from 97 to 102 or 102.5 with accompanying chills. The general condition of the patient was good except for a progressingly increasing pallor and a gradual increase in the size of the spleen.

Blood culture taken August 13, that is, a week after this last operation, was reported negative. It was difficult to find a cause for these continued septic symptoms. The right mastoid and wound in the neck looked healthy and were granulating rapidly; the left mastoid wound was also running a normal postoperative course, and the blood culture continued to remain negative.

Having, as I thought, eradicated all septic foci, I failed to understand why there should be a continuance of the high temperature followed by chills, which occurred about the same time each day. In addition to this fluctuation in temperature, there was an enlarged spleen, so that the entire symptom complex gave the impression that we were still dealing with an obscure septic condition.

Nevertheless, quinin bisulphate was begun, August 19, in 10-grain doses three times a day. There was a prompt cessation of the chills and a drop in the temperature. During the following week it rose only three times to 102, but was unaccompanied by any chill. It then fell to normal and did not rise again. Another blood culture, taken August 20, was again reported negative.

Medication of all kind was stopped, and from this time on, the patient made an uneventful recovery. The spleen gradually receded in size. The hearing in both ears was unimpaired. The wounds granulated rapidly, so that by September 9 both mastoids were practically healed and the patient was discharged from the hospital in an excellent physical condition.

COMMENT

In reviewing this case, several interesting features present themselves from a surgical point of view:

1. History of a mild aural discharge from both ears of one week's duration, three weeks prior to admission into the hospital.

2. The complete absence of all active otitic manifestations and clinical symptoms indicative of a sinus thrombosis.

3. The finding of a *positive* blood culture containing hemolytic streptococci which permitted the tentative diagnosis of a sinus thrombosis. Up to the time of the result of this blood culture, the cause of the septic condition was unexplained, and it was only by this means that the presence of a septic focus in the sinus could be reasonably suspected. This was substantiated later by the operative procedure, as we have seen, and again emphasized the importance of taking blood cultures in all cases of an obscure nature running an unexplained septic course. The case, furthermore, corroborates the laboratory findings of Libman,[3] who maintained and conclusively demonstrated that in those cases in which there was a history of an aural affection, and the blood culture was found positive, a thrombosis of the lateral sinus was almost invariably present. His investigations, moreover, showed that sinus thrombosis and meningitis are the only otitic complications giving rise to a bacteriemia.

That these findings were correct in the majority of cases was substantiated by the conditions found at the time of operation. For, in the ten cases in which operation was performed in the otologic service of Mount Sinai Hospital by Gruening,[4] and in another series of cases reported by Oppenheimer,[5] the blood culture was positive in nearly every instance, and a septic thrombus was found at the time of operation.

One must not forget, however, that even in cases in which a thrombus of the sinus is present, the blood culture is not always positive at the first examination.

3. Libman: The Value of Bacteriological Investigations in Otology, with Special Reference to Blood Cultures, Arch. Otol., 1908, xxxvii.

4. Gruening: Six Cases of Thrombosis of the Lateral Sinus Operated Upon in the Ear Ward of Mt. Sinai Hospital in the Course of the Past Winter, Tr. Am. Otol. Soc., 1906. Sinus Thrombosis of Otitic Origin and Its Relation to Streptococcchaemia, N. Y. Med. Jour., June 5, 1909.

5. Oppenheimer: Some Remarks on Sinus Thrombosis, with Particular Reference to the Diagnostic Value of Blood Cultures in Otitic Disease, Ann. Otol., Rhinol. and Laryngol., March, 1911.

According to Libman,[6] this may be due to the fact that the blood culture may have been taken before a bacteriemia has been established, or the bacteria may be in the blood in such small numbers that they are not found in the amount of blood taken for the culture. It may also happen that below the infected clot there may be another obturating uninfected clot which prevents the bacteria entering the circulation, or there may be an infected thrombus completely closing the lumen of the vessel.

For these reasons, it is generally advisable, when an involvement of the sinus is suspected, to make repeated examinations of the blood. The fact that the blood culture is negative at one time and positive at another may, perhaps, also be explained, as Dr. Heiman has already stated, in that the bacteria are disseminated into the blood stream at certain periods, and in particular during the height of the fever.

In this case, the blood culture was still positive after all septic foci were apparently removed from the right sigmoid sinus and bulb.

As it was difficult to find an explanation for this, the third operation, that is on the left or normal ear, was undertaken, with the idea that the sigmoid sinus on that side might also be involved. As we have seen, nothing was found, yet the blood cultures taken subsequently were all negative. It was apparent that the last procedure had nothing whatever to do with this, and it may have been that the continuance of these positive blood findings was due to some small septic focus which was still lodged in either the sigmoid or petrosal sinuses, or in the bulb of the affected side, or that pieces of the thrombus may have entered the circulation, causing metastatic foci without any clinical manifestations. When this obscure focus was overcome by the defensive power of the blood, there were no longer bacteria disseminated into the general system, and the blood cultures taken subsequently were found negative. In spite of the absence of bacteria in the blood, the patient still presented the symptoms of a general infection, which continued for some time.

4. The hard ebonized mastoid bone, apparently free from any destructive changes, and solid throughout. There were no evidences of a persinous inflammatory condition. It did not appear, therefore, that infection of the sinus took place, as is usually the case, by direct extension of the suppurative process in the bone, but through the anastomoses of the veins of the middle ear and those of the meninges, or by way of the emissary veins of the mastoid bone. That infection of the sinus frequently develops in this way without any macroscopic changes is a well-recognized fact. It seemed that in this case, we were dealing with such a mode of infection; this may have been, however, one of those unusual forms of primary thrombosis of the jugular bulb. In such cases, infection takes place directly through a dehiscence in the floor of the tympanic cavity into the jugular bulb, whereupon the septic process extends upward into the sigmoid sinus, and downward, causing a phlebitis of the jugular vein.

5. The finding of pus by aspiration of the sinus. This procedure, which I have employed in a number of cases, has the advantage that one can readily ascertain the contents of the sinus, without incising its wall. Of course, it may happen that one obtains a quantity of blood at the place of puncture and is thus made to believe that the sinus is free from infection, while in reality there is a septic thrombus above or below, which does not entirely obliterate the lumen of the vessel. In this case, however, the thrombus so completely filled the vessel that aspiration immediately revealed the presence of the sepsis. For this purpose I usually employ a large needle, and might add that it is advisable to introduce it into the lumen of the vessel at an acute, rather than at a right angle; for, by observing this precaution, one avoids penetrating the inner wall of the sinus.

6. Excision of the internal jugular vein before curetting the sinus. As soon as the presence of a septic process has been established in the sinus, either by aspiration or by incision, it is advisable to proceed immediately to the resection of the vein. It will be noticed in the case detailed above, that as soon as it was learned that we were dealing with a suppurative condition in the sinus, the parts were not disturbed until the jugular vein and part of the facial vein were first excised. This having been accomplished, attention was then again directed to evacuating the contents of the sinus. I am of the opinion that it is always advantageous to follow this mode of procedure, for, by doing so one first shuts off the portal of entry, whereby septic material and particles of the thrombus which have been loosened by the operation are prevented from entering the general circulation and setting up metastatic foci in other parts of the body. The question frequently arises whether it is better to excise or to ligate the vein. It has been my experience, and it seems to be the consensus of opinion of other observers, that excision is always preferable. This is based on the fact that almost every case of sinus thrombosis is associated with a phlebitis of the jugular vein. If, therefore, the vein is only ligated, it is difficult to tell macroscopically at the time of the operation how far the phlebitis extends, and as often happens, a part of the infected vein remains below the ligature, which serves as a means of reinfection of the blood.

30 West Eighty-Eighth Street—108 East Sixtieth Street.

6. Libman and Celler: Importance of Blood Culture in the Study of Infections of Otitic Origin, Am. Jour. Med. Sc., December, 1909.

PARTIAL MYXEDEMA WITH REPORT OF CASE

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If we may judge from the quantity of American literature on the subject, partial myxedema does not occupy the position of importance which it deserves.

The first article on partial myxedema in American literature seems to have been one by Elliott[1] in 1908. In 1909 a report on partial myxedema by Nichols,[2] besides giving a comprehensive account of the condition from a historical and clinical point of view, included the complete report of a case with metabolic study and the literature bearing on the subject up to the time of his publication.

Osborne's[3] clinical and casuistic report on the subject appeared in 1912.

1. Elliott, A. R.: Incomplete Myxedema (Hypothyroidea), THE JOURNAL A. M. A., May 30, 1908, p. 1763.
2. Nichols, J. B.: Partial Myxedema, THE JOURNAL A. M. A., April 10, 1909, p. 1162.
3. Osborne, O. T.: Some Common Types of Hyposecretion of the Thyroid, THE JOURNAL A. M. A., Nov. 2, 1912, p. 1618.

In the past five years cases of partial myxedema adultorum have been reported by the following authors: Thistle,[4] Williams,[5] Regis,[6] Price,[7] Osborne,[8] Saenger,[8] Pierret,[9] Michel,[10] Hertoghe,[11] Henry,[12] Cawadias,[13] Howard,[14] Cobb,[15] Brush,[16] Milne.[17]

This list is probably not complete. In the recent French and German literature a few references are encountered to so-called thyroid instability or dysthyroidism. Such cases are not included in the above list because there is no general agreement on the nature of these cases, in some of which it is contended that the thyroid function is intermittently raised and lowered.

Hertoghe denies the existence of these so-called cases of thyroid instability and accounts for the symptoms of apparent hyperthyroidism, occurring in the treatment of partial myxedema by thyroid extract, on the ground of too rapid thyroidization. The symptoms disappear when the dose is lowered.

The following case of partial myxedema has recently come to my attention. One especially interesting feature about it was that the patient received but little sympathy prior to the discovery of the real condition, because she was supposed by her friends to be more or less continuously under the influence of liquor, an imputation on the woman's character which was dispelled by thyroid extract.

History.—E. V. B., aged 44, widow, was twice married, first at the age of 16. Had three children in the marriage, all of whom are alive and healthy. Second husband died of tuberculosis. Patient had several miscarriages. She began to menstruate when 12 years old. Menstruation during most of her life has been painless and normal.

Family History.—The patient is the youngest of four children. Her mother died at the age of 40, while the patient was an infant, of laryngeal tuberculosis. One sister is living and is in fair health except for a weak throat. One brother died of acute tuberculosis, aged 30. One brother and one sister died in infancy; one aunt on her mother's side still lives.

Previous History.—She had measles when a young child and scarlet fever at 10; had slight malarial infection at 25. Beyond these diseases she was never sick in her life except in childbirth, up to the development of the present illness.

Five years ago (1909) she was taken suddenly ill with pain in the throat and side of neck. The attack which began in the evening was accompanied by difficulty in swallowing. The pain was severe and required morphin to alleviate it. The lower parts of the ears, hands and feet became swollen and there was burning pain in these parts. The physician who saw her in the attack considered it angioneurotic edema. The symptoms varied paroxysmally for about a week and then disappeared.

Three years ago the patient fell down a flight of stairs, striking the right shoulder and head, but the effects soon passed away.

In the spring of 1912 she had an attack of cystitis with painful, frequent urination and hematuria, the whole attack lasting a week.

In the summer of 1913 menstruation ceased for several months, but she had no subjective symptoms. Later it became reestablished and is now irregular.

Present Illness.—The beginning of the symptoms of the present illness were indefinite and the patient is unable to fix them chronologically with exactitude. According to her best recollection the first signs appeared about four years ago, as slight intermittent swelling of the hands and feet. At times she could not comfortably put on her shoes. Then suddenly the swelling would disappear and she would feel as though her shoes were dropping off. She found that a number 7 glove was necessary instead of a 6¼.

Soon afterward, or perhaps simultaneously, she noticed that her upper lip dropped and felt stiff when she talked. Her tongue seemed thickened and felt a little too large for her mouth.

Other symptoms appearing at this epoch were pains in the back of both thighs aggravated by going up or down stairs; a "feverish" taste in the mouth; tendency to feel "frozen" all the time; an emotional state with disposition to cry, and gradual increase in body weight.

Later she noticed that she rarely or never perspired and that her skin was becoming dry and glossy or rough in places, particularly on the hands, legs, abdomen, back, face, neck and outer aspects of arms.

There was a sensation, more or less continuous, of the hands going to sleep. The swelling of her hands appeared to be aggravated at the menstrual periods.

Difficulties in speech and gait became gradually more and more noticeable so that her friends and relatives remarked about it.

Speech was thick and her gait a little uncertain and wobbly. The appearance of these symptoms referable to speech and gait unfortunately gained for her among her acquaintances the undesirable and embarrassing reputation of being more or less continuously tipsy. She was by no means a total abstainer from alcohol, but she frequently went for long periods without consuming a drop and the amount of liquor which she took was totally inadequate to account for the symptoms.

She noticed further, a slight deficiency of memory and slowness of expression, though no mental symptoms ever appeared.

Occasionally she noticed a rather abundant salivation which tended to choke her and at other times there was a nervous sensation of choking in the throat.

Physical Examination (April, 1914).—The patient is a good looking, rather stout woman in the middle forties. Her hair is not gray. Her neck is noticeably thick. Her features appear coarse looking and the lines of expression of the face tend to be obliterated. The weight is 189 pounds. Former weight 170. The lips are thick and the tongue large and stiff. The supraclavicular regions on both sides show soft tumefactions.

The skin over the hands, wrists and legs is glossy and the subcutaneous tissue in these regions is thickened and tense, but does not put on pressure. The face is rather expressionless and the smile appears forced. The nasolabial furrows are visible but shallow. The face seems large and fat, but there is some color in the cheeks. The hair is not gray but seems dry and lacking in nutrition. The patient says her hair is a little thinner than formerly, especially on top. According to her statement her hair was formerly very long and luxuriant.

Her face is decidedly lacking in expression and this she has noticed herself, stating that she finds herself sitting for long periods at the window peering aimlessly without. Her lips are noticeably thick and the mouth appears enlarged.

In speaking, S is pronounced SH somewhat like that of a mildly intoxicated person and there is an apparent difficulty in enunciating words of which the patient herself is aware and on which she remarks.

She is perfectly well oriented in every respect, although there is some defect of memory, particularly for names. She is neither irritable nor suspicious, though she notes

4. Thistle: Canadian Pract., 1910, xxxv, 357.
5. Williams: Clin. Jour., 1909-10, xxxv, 167.
6. Regis: Gaz. hebd. d. sc. méd. de Bordeaux, 1910, xxxi, 124.
7. Price: Am. Med., 1911, New Series, vi, 407.
8. Saenger: Deutsch. Ztschr. f. Nervenh., 1912, xliii, 392; Med. Klin., 1911, vii, 1885.
9. Pierret: L'Echo méd., Lille, July, 1912, p. 364.
10. Michel: Thèse de Paris, 1912.
11. Hertoghe: Ann. et Bull. Soc. de méd. d'Anvers, 1912, lxxiv, 47.
12. Henry: Lancet, London, 1914, i, 1722.
13. Cawadias: Bull. et mém. Soc. méd. d. hôp. de Paris, 1914, Series 3, xxx, 207.
14. Howard: Long Island Med. Jour., 1914, viii, 269.
15. Cobb: Brit. Med. Jour., 1914, i, 1349.
16. Brush, E. N., and Cornell, W. B.: A Case of Myxedema, with Recovery, and Seven Years' After-Care Notes, Arch. Int. Med., May, 1913, p. 530.
17. Milne: Indian Med. Gaz., 1914, xlix, 221.

a tendency to be more than normally sensitive and is disposed to cry. There are no delusions nor hallucinations. The temperature is 98.8, pulse 70, a trifle weak. Examination of heart and lungs negative. Urinalysis negative. Color normal, reaction acid, specific gravity 1.024. No albumin or sugar. Slight indicanuria. Feces examination negative. Stool semisolid, reddish brown, well digested and contains no mucus.

Tentative diagnosis, partial myxedema. The patient was put on thyroid extract, gr. ii, t. i. d.

For a few days there was rather severe muscular pain in different parts of the body, but immediately and almost magically an entire transformation in her feelings and appearance was worked.

She became elastic and steady in her gait, began to lose flesh, and with it her more than matronly figure. The pains being severe, thyroid was diminished to one tablet a day.

Very soon after, she began to have hot flushes as though from normal menopause. The skin became moist. But the greatest relief to the patient came in a change in her speech, which had constituted so embarrassing a difficulty before. She could express herself glibly and was delighted at the restoration of mobility of tongue and face.

All these improvements occurred so suddenly and as it were, dramatically, that they were promptly noted by all her relatives and friends.

It was found that one thyroid tablet per day was sufficient to maintain the patient *in statu quo* and prevent the reappearance of any myxedema symptoms, a condition which has remained substantially unchanged up to the present.

The above case would apparently justify us in adding chronic alcoholism to the list of diseases or morbid processes with which partial myxedema may be confused. With Bright's disease, on account of the swelling of the face, it may be and has been mistaken.

I do not propose to enter, in this brief report, into the symptomatology of partial myxedema, since this aspect of the question has been quite completely covered by Nichols, Osborne and others. I believe it worth while, however, to enumerate the chief clinical types of thyroid insufficiency which appear to be recognized at present. They come under six categories (French).[18]

1. Certain infants, who without being true cretins, present symptoms of amentia or idiocy.

2. Certain backward children, between 2 and 5 years of age, showing various symptoms, of which the two most familiar are slowness in learning to talk and delay in learning to walk.

3. Growing boys and girls, suffering either from general mental backwardness or persistent nocturnal enuresis.

4. Certain stout, sterile women of the child-bearing age.

5. Certain females at or about the menopause who have rapidly become too stout.

6. Sufferers from certain nerve affections, which closely resemble and are frequently called neurasthenia and tic douloureux.

Besides the generally accepted pathologic state to which the name partial myxedema or hypothyroidism has been given, there is a noticeable tendency at present to incriminate thyroid insufficiency in the genesis of other morbid processes. For example, hypothyroidism has been seriously offered as the real cause of chronic appendicitis by Hertoghe,[10, 19] who is presumably entitled to special consideration in his views, since he was one of those who originally created the clinical entity of partial myxedema or hypothyroidism. Juvenile scoliosis has also been recently included among the pathologic processes which owe their origin to defective thyroid secretion (Dubreuil-Chambardel[20]). Perhaps the day is coming, which Hertoghe predicts, when "we will interrogate the thyroid equation (hypo or hyper) in all our patients with the same fidelity that we inquire to-day into their previous history as regards tuberculosis, syphilis and alcoholism."

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18. French: Clin. Jour., London, 1911-12, xxxix, 321.
19. Hertoghe: Bull. Acad. Roy. de méd. de Belg., 1914, xxviii, 64; ibid., 1899, xiii, 231.

CAVITY FORMATION WITHIN THE MEDULLA OBLONGATA: SYRINGOBULBIA

WITH REPORT OF A CASE

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Syringobulbia, cavity or fissure formation in the medulla oblongata, the analogue of syringomyelia, cavity or fissure formation in the spinal cord, is comparatively a rare disease. The symptomatology, however, is so striking that in the majority of instances the diagnosis may be made without difficulty by those conversant with the clinical aspect of the disease.

Associated with the trophic disturbances and dissociation of the sensibility so characteristic of syringomyelia (analgesia and thermo-anesthesia present with tactile sensibility unimpaired) exists a group of symptoms due to involvement of the bulb and the adjoining structures. When these two orders of symptoms are found in conjunction, the diagnosis of syringobulbia may be made with certainty. In the opinion of most authors, the bulbar disturbances of syringomyelia are singularly benign, and the prognosis for a long duration of life is not necessarily unfavorable. This is in marked contradistinction to the grave outlook which the development of these symptoms entails in other diseases of the central nervous system.

The medulla oblongata, or the bulb of the cerebral spinal axis, as it is familiarly called, may be involved by cavity formation or syringosis in one of three ways: it may be the sole seat of the cavity formation; it may be the place where cavity formation begins which subsequently extends into the spinal cord; and finally it may be implicated secondarily, as it were, by a lesion which extends upward from the spinal cord.

Up to the present time I can find no case recorded in which the cavity formation has been limited to the bulb alone. Of the cases so far reported, the number which legitimately may be accorded a place in the second variety is very restricted. In Schlesinger's monograph only two are put in this category.[1] Other writers bear similar testimony to the rarity of this form of syringobulbia. The majority of cases have conformed clinically to the third variety—that variety in which the spinal symptoms after a fairly short time have been followed by the development of bulbar symptoms. The case herewith reported belongs in this category.

History.—W. H., man, aged 21, entered the Neurological Institute, April, 1913. The family history is negative. At the

20. Dubreuil-Chambardel: Gaz. méd. du Centre, Tours, 1914, xix, 97.
1. Schlesinger: Die Syringomyelie, Ed. 2, Leipzig, 1902.

age of 12 he had meningitis. When he recovered he was absolutely deaf, and this has persisted. During convalescence he complained of diplopia and uncertainty of gait, but these disturbances were transitory.

The onset of the present illness occurred in November, 1911, when he began to suffer from severe continuous pain in the nape of the neck radiating into the arms. After a week's rest in bed this ameliorated greatly. A few days later, becoming intoxicated, he fell asleep with one hand resting on a hot stove, and thus badly burned it. He felt no pain in the hand either at that time or subsequently. This was his first experience of this kind, though he has since then suffered from many injuries of similar character. The neuralgic pains in the neck and arms then recurred, and persisted without intermission for three or four months. On their cessation, weakness of the left arm developed, which slowly progressed so that he became unable to move this member without the aid of the right hand.

In June, 1912, seven months after the appearance of the initial symptoms, he developed unsteadiness and swaying of the gait, especially when fatigued. This has become continuously more pronounced.

In November, 1912, one year after the onset, occurred a temporary deflection of the tongue to the left. This was associated with dysphagia and dysarthria, and persisted for between two and three weeks.

In March, 1913, he felt what he describes as an electric shock running through the right arm. Since then he has complained of stiffness in this extremity and inability to recognize what objects he grasps when he puts his hand in his pocket. During this period of the acute development of the disease the patient lost 35 pounds in weight, but this has been largely regained.

Examination.—April, 1913: The patient is well developed and well nourished. A moderate muscular atrophy exists, localized in the left biceps and triceps. There is a marked weakness of these muscles, and to a less degree all the other muscles of this extremity are similarly affected. The dynamometer reading on the right is 75, on the left 35. There is no reaction of degeneration. No other muscular abnormalities are noted.

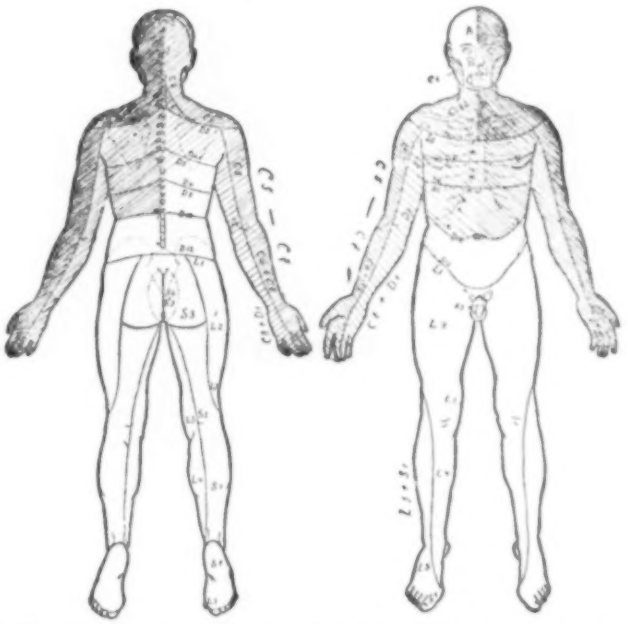


Fig. 1.—Areas of analgesia and thermo-anesthesia, showing preponderance on the left and radicular distribution: *A*, distribution of ophthalmic division of the trigeminus; *B*, of superior maxillary division; *C*, of inferior maxillary division.

The left half of the face is smaller than the right, but there are no signs of sympathetic involvement. The hands are cold, moist, but not edematous, and present a number of deep erosions due to burns. The nails on several fingers are split into two layers. There exists a moderately depressed sternum (*thorax en bateau* of Marie) which developed during 1912.

A pronounced Romberg is present, though the patient falls in no particular direction. He stands with the pelvis projected forward and the feet widely separated, a typically cerebellar station. The reeling and staggering gait is also distinctly cerebellar in character. He constantly deviates to the left. There is no tremor or incoordination nor are there present asynergy, adiadokocinesis or any of the other signs of the cerebellar syndrome of Babinski.

The right knee jerk has been exaggerated throughout. The left at first absent, reappeared, and ultimately approximated the right in activity. The ankle jerks are normal. A double Babinski exists, but there is neither patellar nor ankle clonus. In the arms the tendon reflexes are all much diminished. The left abdominal and both epigastric reflexes are absent. Other cutaneous reflexes are normal.

The sensory changes consist of a pronounced syringomyelic dissociation, the distribution of which is represented in Figure 1. This analgesia and thermo-anesthesia extends upward from the area of skin supplied by the tenth dorsal segment. Above this level the sensory loss increases, presenting its maximum intensity in the cutaneous area innervated by the upper four or five cervical segments. On reference to Figure 1, the radicular distribution of these disturbances is very evident. There exists a very slight diminution of tactile sensibility over the left half of the body. The postural sense is unimpaired. The sensory loss throughout is more pronounced to the left of the median line.

The analgesia in the area of distribution of the left trigeminus is especially interesting on account of the diverse degree of involvement of the three divisions of this nerve. The ophthalmic division is most involved, the superior maxillary less so, while the inferior maxillary presents the least degree of sensory loss. The patient voluntarily remarks that when the painful or thermic stimulus descends the face, he feels nothing over his forehead, sensation is better on his cheek and best of all at the level of his chin. The motor function of the nerve is unimpaired.

There exists a very evident astereognosis affecting the right hand. On this side the patient fails to identify by palpation such common objects as a watch, a key, a pair of scissors, etc., while with the left hand these objects are rapidly and accurately identified. There is no motor difficulty to account for this deficit. Muscular force is intact on the right, and all the finer manual movements requiring the highest degree of coordination are performed with more facility on this side.

With the exception of the auditory, the special senses are unaffected. The cochlear and vestibular divisions of this nerve no longer function. The eye examination is negative except for a pronounced nystagmus, coarse in type, occurring on lateral deviation of the eyes and most marked when looking to the left. The corneal reflexes respond normally.

The speech is drawling, nasal, and with a noticeable absence of inflections. The tongue is protruded in the middle line, and there is no atrophy or tremor. The larynx is unaffected. The sphincters are intact and have always been so.

All laboratory reports, including those on the cerebrospinal fluid, have been negative.

From a consideration of what was stated in the introductory portion of this article, this case may be diagnosed as one of syringobulbia. The bulbar and cerebellar symptoms developing seven months after the onset of the disease, and their predominance over the spinal symptoms, justify us in making this diagnosis. The dysarthria, dysphagia, fifth nerve disturbances, nystagmus, impaired station and gait are all the expression of a lesion affecting the bulb and the adjoining cerebellar tracts. The intimate anatomic relations existing between the fifth nerve and the inferior cerebellar peduncle, both in this part of their course bulbar structures, are seen on reference to Figure 2.

The incoming sensory fibers of the fifth nerve on reaching the pons bifurcate. Short ascending branches terminate around the principal sensory nucleus in the pons, while the longer descending branches can be traced through the bulb as far as the third cervical segment of the cord. These fibers constitute the descending root of the fifth nerve (Fig. 2, V. D. R.), and end at various levels in a mass of gray matter placed just to their inner side. This mass of gray matter, the descending nucleus of the nerve (Fig. 2, V. D. N.), also extends down into the cord. Immediately external to these structures and in direct contact with them are the lowermost fibers of the inferior cerebellar peduncle. These are derived from the cord and bulb, and end in the cortex of the central lobe of the cerebellum. Owing to this anatomic proximity, we can easily understand how a lesion extending outward laterally from the vicinity of the central canal may produce some form of sensory disturbance in the cutaneous distribution of the fifth nerve and at the same time a more or less definite cerebellar syndrome.

The most important and interesting of the bulbar symptoms is undoubtedly the analgesia and thermoanesthesia of the left trigeminus. Lamacq, Schlesinger, and Ivanoff, all found this to be a common and early symptom in syringobulbia, as one would indeed expect to be the case, owing to the projection downward into the spinal cord of the descending root and nucleus of this nerve. There exists, however, a considerable difference of opinion regarding the distribution of the sensory disturbances in lesions of these structures. Kutner and Kramer[2] and Schlesinger[3] consider that a lesion of the distal portion of this column results in anesthesia of the ophthalmic division, a lesion of the intermediate portion in anesthesia of the inferior maxillary division and a lesion of the proximal portion in anesthesia of the superior maxillary division. Wallenberg and May oppose this. They concluded from a clinical study of their cases that the distal portion of the root contained the fibers derived from the ophthalmic division, the intermediate portion those derived from the superior maxillary division, and the proximal portion those derived from the inferior maxillary division. These conclusions they subsequently confirmed anatomically. In this case, the distribution of the sensory disturbance supports the view held by Wallenberg and May, and is opposed to that advanced by Schlesinger and Kutner and Kramer.[4]

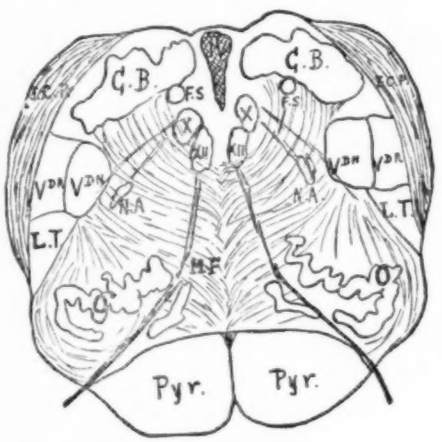


Fig. 2.—Section across the medulla oblongata at about the junction of the middle and lower thirds of the olive; *I. C. P.*, inferior cerebellar peduncle fibers passing backward; *V. D. R.*, *V. D. N.*, descending root and nucleus of the fifth nerve; *L. T.*, lateral tract of the bulb containing the spinal fibers which are passing into the inferior cerebellar peduncle to form the spinal contingent of that structure; *Pyr.*, pyramids; *M. F.*, median fillet; *O.*, olive; *G. B.*, nuclei of the columns of Goll and Burdach; *X*, *XII*, nuclei of the tenth and twelfth nerves; *N. A.*, nucleus ambiguus; *F. S.*, solitary fascicle; *IV*, fourth ventricle.

The integrity of the motor division of the nerve is owing to the relatively high position it occupies in the pons. It thus escapes involvement by the cavity formation which has not extended so far upward.

The cerebellar symptoms, while not numerous, are clearly defined and characteristic, and their existence can be satisfactorily explained by assuming a lesion or at least disordered function of one of the afferent cerebellar tracts, namely, the inferior cerebellar peduncle, the anatomic relations of which have been previously considered.

Within the cord itself the cavity is not extending forward. Only in the fifth and sixth cervical segments is this apparently occurring where the anterior horn cells innervating the left biceps and triceps are probably affected. This variety of atrophy as an onset type is uncommon. The great majority of cases present in the early stage of the disease the classical Aran-Duchenne atrophy affecting the intrinsic muscles of the hand. That the lesion is extending in a lateral direction may be inferred from the evidence of a double pyramidal tract involvement (double Babinski). Whether we consider the cord or the bulb, the preponderance of all symptoms to the left would indicate that the pathologic process is more active in this direction.

An interesting feature is the loss of the stereognostic sense in the right hand. This has been rarely reported in syringomyelia except associated with some form of motor disability, usually an Aran-Duchenne atrophy. In these instances it has not always been possible to say how much of the failure to identify by palpation was due to the atrophy and resultant inability to manipulate objects properly, and how much was due to a real loss of the stereognostic sense. But here it is to be noted that the astereognostic hand is that which presents the less degree of sensory disturbance and no motor disability. The presence of a tactile agnosic element involving the cerebral association fibers is thus strongly suggested, as it is difficult otherwise to account for this loss of function. Unfortunately, at the time of the determination of the astereognosis a complete examination of all the modes of sensibility was not undertaken. One month later a complete sensory examination revealed nothing abnormal in the affected hand.

This case is considered worthy of publication owing to the early onset of symptoms pointing to involvement of the oblongata, the distribution of the trigeminal sensory dissociation, the onset with localized and unilateral brachial type of atrophy, and the presence of a definite even if temporary astereognostic or asymbolic condition.

60 West Fifty-Eighth Street.

2. Kutner, R., and Kramer, F.: Sensibilitätsstörungen bei acuten und chronischen Bulbarerkrankungen, Arch. f. Psychiat., 1907, xlii, 1058.

3. Schlesinger: Die Syringomyelie, Ed. 2, Leipzig, 1902, p. 165, and diagram, p. 166.

4. I have since observed a case of fracture of the third cervical vertebra and two other cases of syringomyelia, all with trigeminal sensory disturbances. In these cases the distribution of the analgesia is identical with that found here.

The Sole Specific.—There is no sovereign remedy for tuberculosis outside of good food, fresh air, rest and healthy living. House disinfection is the key to the prevention of tuberculosis.—L. Flick.

A CASE OF TYPHUS FEVER

GEORGE DOUGLAS HEAD, B.S., M.D.
Associate Professor of Medicine, University of Minnesota
MINNEAPOLIS

The identity of so-called Brill's disease and typhus fever has been established by Anderson and Goldberger, together with the mode of transmission by the body louse.

Sporadic cases have been reported in New York and Brooklyn (Brill, Louria, Nicoll, Ziegel, Coleman); Boston (Roger, Lee); Chicago (Strouse); Atlanta (Paullin); Milwaukee (Patek); Indiana (Charles); Virginia (Goldberger); Washington, D. C. (Newman).

Thus far no case of typhus fever has been reported from Minnesota or any of its cities. Following the suggestion of John F. Anderson that the observed cases should be reported from all parts of the United States, the following case in Minneapolis, Minn., is recorded.

Mr. G., a Jewish peddler, aged 50, married, no children, was seen on May 3, 1914.

Patient had been a healthy man all his life up to about two weeks prior to the time when he was taken sick. He then began to feel out of sorts, lost his appetite and had headache. About one week later he began to have fever, felt prostrated and weak, complained of more headache, some nausea, loss of appetite, and stopped his work.

When first seen by Dr. Groll the patient had a temperature of 102 F., was weak and prostrated, but without other distinctive symptoms. Two days later he was seen again with a temperature of 103, was dull and apathetic with a badly coated tongue, rapid pulse and a fine submerged, dusky red, maculopapular rash, more marked over the skin of chest and abdomen and shoulders, but not apparent on the face.

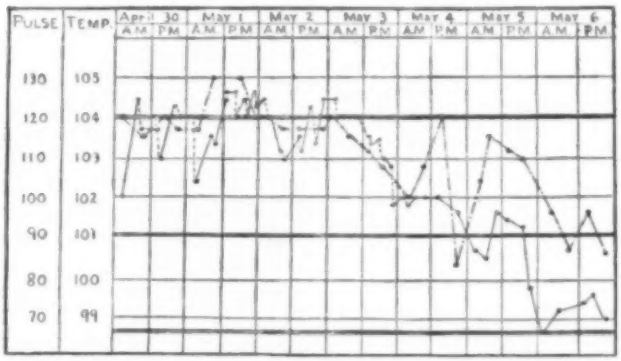


Chart in case of Mr. G., typhus fever, showing temperature record (solid line) and pulse (broken line).

Patient had had no diarrhea, no cough, no vomiting, no nose bleed. No rose spots could be seen. The spleen was not palpable. The Widal reaction was negative. During the succeeding few days the fever remained high (103 to 104). The mottling of the skin became more marked and more general over the body.

I first saw the patient in consultation on the seventh day following the onset of the fever. He was complaining of headache; had had no vomiting, no delirium; was a well-nourished, stockily built man, was dull and apathetic, but answered questions intelligently; had a heavily coated dry tongue. The pupils were equal and reacted to light. Knee jerks were active. There were no palpable lymph glands; no edema; no tenderness over bones or elsewhere; no tympanites. The spleen was not palpable, liver not enlarged, lungs and heart negative. No Kernig sign. Plantar reflex normal. The clinical finding of importance was the peculiar submerged, dusky red rash, looking not unlike a luetic roseola, and yet in certain areas, especially over the chest and abdomen, fine raised rose colored spots, not unlike those of typhoid fever, could be seen. These spots, however, were more bluish in color than rose spots and they disappeared only on prolonged, firm pressure. This mottling, dusky looking rash covered the skin of the chest, abdomen and shoulders. No rash could be seen over the lower extremities or the face. No petechiae were found. The high fever and the mottling rash suggested either an atypical typhoid, septicemia, measles, lues or meningitis. Typhus fever was not thought of at the first consultation.

The patient was referred to Asbury Methodist Hospital for further study.

During the next two weeks the case was seen a number of times with Dr. Groll. During the severe part of the illness the patient lay in a dull, stuporous state with at times a muttering delirium. His cheeks were flushed, conjunctiva injected, face dusky, tongue dry, sordes on the teeth.

The fever was a sustained high temperature like that of pneumonia (see chart). Pulse was fast (116 to 130). Repeated lung examinations were negative. The rash came out gradually over the arms and could even be seen on the wrists and hands. The lower extremities were free except on the upper part of both thighs.

Incontinence of feces and urine developed and for a number of days the patient lay in a low, unconscious, typhoidal state. The Widal reaction made on three occasions was negative, the Wassermann test negative. Leukocyte count on the eighth day was 5,300, on the fourteenth day 6,630. Blood culture on the tenth day was negative. Urine contained albumin and casts. Differential leukocyte count on the ninth day—polymorphonuclears 65.5 per cent., small mononuclears 26 per cent., large mononuclears 6 per cent., eosinophils 0, transitionals 2.5 per cent.

At no time was the spleen palpable, nor was tympanites marked. There was no diarrhea.

As the disease progressed the rash became darker and more bluish in color, almost purpuric, and yet there were no distinct areas of purpura except some very fine pinpoint-sized purpuric spots scattered throughout the areas over the chest and abdomen.

Contrary to our expectations the patient gradually recovered from his serious condition, the rash faded, the incontinence of urine and feces ceased, fever dropped, mind cleared and convalescence was established on about the eighteenth day.

At the outset of the disease the patient was given calomel in divided doses, followed by magnesium sulphate. From the fourth to the tenth day he received salol, 5 grains every four hours; during catheterization hexamethylenamin, 7½ grains t. i. d.; during convalescence strychnin sulphate, 1/40 grain t. i. d.

The repeated negative Widals, the negative blood culture and absence of distinctive symptoms ruled out typhoid fever. Measles was excluded by the prolonged course and severe symptoms, lues by the negative Wassermann, acute course and absence of an initial lesion. No distinctive symptoms of meningitis appeared and the leukocyte count was low. The favorable course, negative blood culture and low leukocyte count excluded septicemia. The toxic purpuras were out of the question.

The diagnosis of typhus fever was therefore made. The course, sustained temperature, characteristic rash, low leukocyte count and dirty living conditions of the patient justified this conclusion.

Crime and Disease.—I would not want to say to-day absolutely and outright that crime and disease are synonymous. I should have no hesitancy in saying that every criminal is abnormal in some part of his physical being; that all criminality has a physiologic basis.—Vaughan, *Wis. Med. Jour.*

Special Article

PRACTICAL PHARMACOLOGY *

(Continued from page 907)

XI

B. DEPRESSANTS: 6. HYDROCARBON NARCOTICS—(Continued)

HYPNOTICS

Small doses of the hypnotics depress the psychic and some other centers in the great brain, while exerting little influence on other parts of the central nervous system. Larger doses should be avoided in therapeutics because they depress the vasomotor and the respiratory centers.

We have no theory based on observed facts which is capable of explaining the chemical causes of sleep, but it seems probable that sleep is induced by certain products of metabolism which accumulate during waking. If we could determine just what these substances are and prepare them in a form suitable for therapeutic use we should probably have an ideal hypnotic. The claim is often made that the ideal hypnotic has been found, but such claims invariably prove unfounded, and we find that the new preparation has undesirable, and even dangerous, side actions.

Every hypnotic tends to require increasing doses, while the side actions do not diminish correspondingly; hence it is better to use different hypnotics when it is necessary to continue their use for some time.

Alcohol and opium were formerly our principal hypnotics, but these have been superseded largely by others which may be divided into three main groups as follows: (1) those which depend on halogens for their action; (2) those depending on alkyl groups, and (3) those in which an aldehyd group or ketone group determines the action.

Lauder Brunton has stated that the requirements for sleep are: (1) hindrance of blood-flow through the brain (this is not necessarily attended with a diminution of the amount of blood in the cerebral vessels at any given moment); (2) depression of the functional activity of the brain (it is a matter of common experience that mental activity prevents sleep).

A hypnotic must have a selective action on the brain, and one of the objects sought by investigators is the discovery of compounds having this selective action in the highest degree, with a minimum of action on the medullary centers and the heart. This has led to the introduction of many substances of greater or less value, which have been introduced in most cases with enthusiastic praise of their advantages and a disposition to minimize their disadvantages, and even to deny that they have any side actions worthy of mention. This method of exploitation has frequently resulted in the abuse of these newer hypnotics, and many deaths have resulted from overdoses of them, for it must be remembered that there is no such thing as an absolutely safe hypnotic, and that overdoses of any one of them are about as dangerous as an overdose of hydrated chloral.

* This is the eleventh of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

HALOGEN DERIVATIVES

Aldehyd, or acetaldehyd, $CH_3.CHO$, has some slight hypnotic activity, but it is of no therapeutic value, because the hypnotic stage is preceded by excitement. By the introduction of three atoms of chlorin, forming chloral, CCl_3CHO, however, we obtain a useful hypnotic. Chloral is converted into hydrated chloral by the addition of a molecule of water, and this is the form in which chloral is commonly used.

Chloral was prepared by Liebig in 1831, and tested on animals in 1860, but it was not used therapeutically until 1869, when it was introduced into the materia medica by Liebreich. He assumed that, because it is decomposed in the presence of alkalies with the formation of chloroform, this reaction occurred in the blood and that the slowly formed chloroform induced sleep.

Mering showed that hydrated chloral is excreted in the urine as tri-chlor-ethyl alcohol in combination with glycuronic acid. Curiously, this long-disproved theory of Liebreich's has been advanced recently by E. Fougera & Co. to explain the pretended action of their product, Betul-ol.

The blood is practically neutral in reaction, and even though hydrated chloral were decomposed with the formation of chloroform, the amount so formed from a therapeutic dose of chloral would be wholly inadequate to induce sleep during more than a very few minutes, if indeed it would cause sleep at all.

The actions of hydrated chloral resemble those of chloroform qualitatively, at least, quite closely, the chief differences in their behavior being due to differences in their rates of elimination from the body. It will be unnecessary to detail the actions of hydrated chloral on the higher parts of the brain, since this type of action was discussed when alcohol was under consideration.

In the absence of pain sleep may be induced by hydrated chloral with doses which exert but little action on the respiratory and vasomotor centers. From this sleep one may be aroused easily by noise, or by any stimulus which would arouse one from ordinary sleep. With larger doses the sleep is deeper, and the vasomotor and respiratory centers suffer depression, constituting, with the direct action on the heart, the principal source of danger with overdoses.

The respiration is diminished during sleep from any cause, and with therapeutic doses of hydrated chloral there is probably no greater depression of respiration than occurs in ordinary sleep; that is, there is probably no direct action on the center by the drug. Toxic doses, however, do depress the center directly, causing a slower rate with some increase in the depth of the individual respirations. Cushny has shown that the normal response of the respiratory center to carbon dioxid is not altered by therapeutic doses of hydrated chloral, while toxic doses prevent the increase in the rate by carbon dioxid but do not affect its action on the depth; hence the deeper respirations just mentioned in chloral poisoning.

The action of hydrated chloral on the heart and the vasomotor centers precludes its use as a general anesthetic in man, though it is frequently used for this purpose in laboratory experiments. While the blood-pressure falls greatly with toxic doses, it still responds to stimulation by carbon dioxid, and the asphyxial rise of blood-pressure usually occurs after the cessation of respiration. The action on the heart is similar to that of chloroform.

Hydrated chloral is irritant to the mucous membranes of the mouth and gastro-intestinal tract, and when it is administered in too great concentration it causes nausea and vomiting, or if it be administered by the rectum it is expelled. This indicates that the solution of the drug should be well diluted with water or some bland fluid before being administered.

It should be remembered that therapeutic doses of hydrated chloral are not analgesic, and that when pain is the cause of sleeplessness a suitable anodyne, such as morphin or antipyrin, is to be preferred.

Hydrated chloral is absorbed rapidly from the gastro-intestinal tract, and it may be given by the mouth or rectum, the dose being the same by either mode of administration. It is excreted in the urine in combination with glycuronic acid. The rate of excretion probably varies widely with the dose and the effect which it has on the blood-pressure. A cat may remain under the influence of a just non-fatal dose for as much as three or four days, while another will recover from a dose equally as large in one day. It is probable that the more prolonged action is attended with a profound fall of blood-pressure which interferes with renal excretion, while the shorter duration occurs where the circulatory disturbance is insufficient to prevent the prompt elimination of the drug.

The repeated use of hydrated chloral tends to induce the habit, and where hypnotics are to be used for some time recourse should be had to other members of the group, such as veronal or trional.

Acute poisoning with hydrated chloral is not so common when the drug is used alone, because physicians very commonly appreciate its limitations and use it with due caution, but it is a constituent of the proprietary Bromidia, which is commonly used with much less caution, and acute symptoms in such cases are not rare.

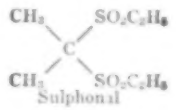
Absorption is so rapid that it is probable that little or no hydrated chloral remains in the gastro-intestinal tract when toxic symptoms are observed after the oral administration, but the stomach may be emptied when the patient is seen shortly after a poisonous dose has been taken. If the poison has entered the circulation, efforts should be directed toward its elimination, and proper symptomatic treatment should be instituted.

The respiratory and vasomotor centers, especially the former, are usually the seat of danger, and artificial respiration should be instituted when there is any sign of approaching paralysis. Schmiedeberg has recommended the use of coriamyrtin as a physiologic antidote to hydrated chloral, but it is a violent poison and probably has no advantage over the much safer caffein, which stimulates both the respiratory and vasomotor centers. Active diuresis should be induced by the administration of hot drinks and in emergency, intravenous injection of warmed saline, as previously suggested in the treatment of strychnin poisoning, the object in both cases being exactly the same.

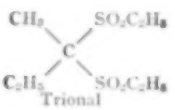
It is not sufficient to insure the safety of the respiratory center, for the more prolonged the elimination of the poison the greater is the opportunity for it to exert its toxic action on the heart. Hence the elimination should be hastened as much as possible.

SULPHONAL AND TRIONAL

These two substances are official as sulphonemethanum and sulphon-ethyl-methanum; chemically they resemble each other closely, differing only in that one of the methyl groups of sulphonal is replaced by an ethyl in trional. This is seen at a glance from the structural formulas:



Sulphonal



Trional

Chemical compounds in general which have anesthetic or hypnotic actions dependent on the presence of ethyl groups are usually less depressant to the heart and the medullary centers than are those which depend on halogens for their action. Ether or ethyl-oxid has these disadvantages to a much less extent than chloroform, or tri-chlor-methane, and sulphonal and trional possess them to a less extent than hydrated chloral, or tri-chlor-aldehyd.

The discovery of the hypnotic actions of sulphonal was accidental. The substance had long been known when Baumann and Kast fed it to dogs during studies in metabolism and were impressed with its hypnotic action. This discovery led to the investigations of closely related products, but none of those discovered since has any material advantage, except that of greater solubility.

The actions of sulphonal and trional differ from those of hydrated chloral largely in their slighter effect on the heart and medullary centers, in their slighter solubility, slighter irritant action and their slower absorption with slower onset of action. They cause depression of the higher centers, inducing sleep in the absence of pain, with little disturbance of the respiration or circulation. Their toxicity is of importance almost exclusively with long-continued use, as very large single doses commonly cause only prolonged sleep, and slight disturbances.

Sulphonal and trional are relatively insoluble, so that they are given as powders or mixtures, and are slowly absorbed, the hypnotic action being usually delayed for an hour in the case of trional and about two hours after sulphonal, which is even less soluble than trional. Occasionally the sleep may be delayed until the following day, or it may occur after the usual interval and drowsiness result on the following day with sleep at the usual hour some twenty-four hours after its administration.

The relative harmlessness of large doses of sulphonal is shown by the effects of a single dose of 100 gm. taken by a student. This was followed by unconsciousness in forty-five minutes. The temperature fell at first but later rose above normal. Sleep lasted five days; this was followed by exanthemas on the sixth day and complete recovery. In another case a dose of 30 gm. caused death from respiratory failure on the third day. Anemia increases the susceptibility to its action, and women are more susceptible than men. Such doses as these are never given in therapeutics and can be of importance only in case of accident or suicide.

The danger from the continued use of sulphonal is especially insidious, because one may take it in constant dosage for long periods without its occasioning any symptoms until these develop quite suddenly in severe form. About 60 per cent. of the cases in which symptoms of severe poisoning occur result fatally despite the most careful treatment.

The following illustrates the fact that long-continued immunity is no guarantee that this will continue:

A woman suffering from sleeplessness and hallucinations used daily doses of 1 to 1.5 gm. of sulphonal during three

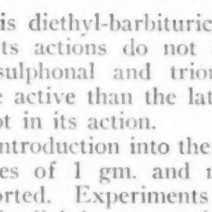
months, after which she became ill, vomiting greenish fluid, the urine was scanty and dark brown from hematoporphyrin; death was preceded by convulsions.

The urine should be examined frequently for hematoporphyrin in every case in which one of these drugs is used habitually. The appearance of hematoporphyrin in the urine indicates the destruction of the hemoglobin of the blood, and calls for the stoppage of administration and the administration of alkaline water in abundance to hasten the elimination of the poison. The treatment must be continued for several weeks after severe symptoms develop. The actions of trional and tetronal, which are used comparatively little, are similar to those of sulphonal.

The earlier laboratory experiments indicated that tetronal was the most actively hypnotic, trional next, and sulphonal the least, but these results obtained on dogs do not apply to man, and trional has become the more popular, while tetronal has never acquired such popularity as the other two.

VERONAL

Veronal is closely related chemically and therapeutically to sulphonal and trional, its formula being:



Chemically, it is diethyl-barbituric acid, or diethyl malonyl urea. Its actions do not differ essentially from those of sulphonal and trional qualitatively, though it is more active than the latter. It is somewhat more prompt in its action.

Soon after its introduction into therapeutics veronal was used in doses of 1 gm. and numerous deaths from it were reported. Experiments on animals indicate that veronal is slightly more active than hydrated chloral, equal doses of veronal causing an even greater depression, with fall of blood-pressure.

Numerous preparations which resemble sulphonal and veronal somewhat have been introduced as hypnotics, and while several of these have merit, the reader is referred to New and Nonofficial Remedies for a discussion of them.

ALDEHYDS

Acetaldehyd causes excitement before inducing sleep, as previously mentioned, but paraldehyd, a polymer of acetaldehyd, is more actively hypnotic without inducing excitement, and has less depressant action on the respiratory center. It is one of the safest of hypnotics, but it has an extremely unpleasant penetrating odor which pervades the room of the patient and which persists for more than a day; it has a persistent disagreeable taste. It has very little action on the heart even with large doses.

Several ketones are of pharmacologic interest, and a few compounds which depend on their ketone groups for their hypnotic action have been introduced into therapeutics; none are important. Acetone is actively hypnotic, and could be utilized therapeutically but for its irritant action on renal epithelium.

THERAPEUTIC USES

The actions of the hypnotics indicate their legitimate therapeutic uses, but caution is necessary regarding their use when sleeplessness is due to causes which can be removed. In other words, the hypnotics are in no sense curative, and should never be used when it is possible to induce sleep by removing or preventing that which interferes with it. Pain, worry, excitement and digestive disturbances are the common causes of sleeplessness, and these should be relieved or prevented by other means when possible. Pain should always be treated by analgesics rather than by hypnotics, of which large doses are required in the presence of pain, whereas small doses of analgesics suffice usually. The use of tea and coffee is a frequent cause of insomnia, and these should be stopped before resorting to hypnotics, of course.

Hydrated chloral is an antispasmodic, and is sometimes used to cause relaxation of the rigid uterine os during labor, and to abolish convulsions in tetanus; for this purpose large doses are required. It is used in combination with potassium bromid when sleeplessness is due to nervousness.

Hydrated chloral is contra-indicated in degeneration of the heart, and should be used cautiously in the presence of respiratory and circulatory disturbances. It is often recommended as an antidote to strychnin, but ether seems preferable in every way.

Sulphonal, trional and veronal are used as hypnotics in much the same conditions that hydrated chloral is, but have less action on the circulation and may be used when hydrated chloral is contra-indicated for that reason. These drugs should not be given continuously for prolonged periods, even when their use is attended with no visible signs of injury. They are also used as antispasmodics in epilepsy, hiccup, chorea and other conditions.

Paraldehyd may be used when hydrated chloral is contra-indicated by cardiac disease, or where a prompt action is necessary. It is also antispasmodic. Mention has been made of its usefulness in controlling alcoholic mania, and it is especially valuable in controlling mania during pneumonia and other diseases in which the heart is threatened with exhaustion and hydrated chloral is contra-indicated. Very large doses may be given in case of need without causing depression of the heart.

DOSAGE

Hydrated chloral is used in doses of 0.3 to 1.3 gm. (5 to 20 grains), but it is usually much better to employ it in the smaller doses in combination with twice as much potassium bromid where sleeplessness is due to nervous excitement; such a dose may require repetition in an hour, if sleep does not result. As an antispasmodic much larger doses may be required, but it is better to give the larger dose just mentioned and continue the smaller doses until relief is afforded, or until toxic symptoms indicate that the limit of therapeutic dosage has been approached.

The average dose of sulphonal or trional is usually stated as 1 gm. (15 grains), but 0.6 gm. (10 grains) often proves effective. The daily dose should not exceed 2 gm. (30 grains). The older tables gave the dose of veronal as 1 gm. (15 grains), but this is certainly too large for the average, and the dose should be from 0.3 to 1 gm. (5 to 15 grains).

The insoluble hypnotics should be given in the form of powders, which may be enclosed in capsules or suspended in hot milk, which is somewhat sedative, but which should be sipped and not drunk rapidly, as it forms an indigestible curd when taken in the latter way, whereas when sipped it is precipitated in flaky curds which are much more readily digested.

Hydrated chloral is best taken in a large amount of water or in warmed milk.

The dose of veronal sodium is about the same as that of veronal; it is more soluble and acts somewhat more rapidly. The aqueous solution has a bitter alkaline taste that is objected to by some patients. It should be given well diluted.

The average dose of paraldehyd is 2 c.c. (30 minims), best administered with cracked ice or in ice-water, on account of its disagreeable taste. It should not be long continued owing to the danger of the formation of the habit similar to that with alcohol. Much larger doses are usually required to control alcoholic mania, and from 10 to 15 c.c. (2 to 3 teaspoonfuls) may be given and repeated in half an hour.

A word of caution should be uttered here in regard to the use of Bromidia: This preparation is said to represent 15 grains of hydrated chloral, 15 grains of potassium bromid, ⅛ grain of extract of cannabis indica and ⅛ grain of extract of hyoscyamus in each teaspoonful of the preparation. It is obvious that if this formula is correct a teaspoonful of Bromidia contains four full therapeutic doses of hypnotics and narcotics. The ingredients are incompatible, because extract of Indian cannabis contains a resin not soluble in the menstruum employed. There is no excuse whatever for combining such a mixture of drugs when a simple hypnotic is required, and if an analgesic is necessary morphin or antipyrin should be used.

MATERIA MEDICA *

Chloralum Hydratum.—Hydrated Chloral, U. S. P. This drug, popularly known as chloral hydrate, CCl_3CHO+H_2O, is the combination of trichloraldehyd or chloral, CCl_3CHO, with one molecule of water. It occurs as colorless, transparent crystals having an aromatic, penetrating odor and a bitter and caustic taste; it is slowly volatilized when exposed to air. It is very soluble in water, alcohol or ether. Hydrated chloral is incompatible with alkalies and alkali carbonates, which cause the formation of chloroform. A compound of chloral believed to be chloral alcoholate sometimes separates out from mixtures containing hydrated chloral, an alkali, a bromid and alcohol. Hydrated chloral is best administered in simple aqueous solutions with or without the addition of a bromid. The bitter and caustic taste may be effectually masked by sirup and aromatics.

Veronalum.—Veronal, N. N. R. This substance is also known as diethyl barbituric acid, diethyl malonyl urea and malo-urea. It is described chemically as 2,4,6, trioxy-5-diethyl pyramidin, a ureid derived from diethylmalonic acid and urea. Veronal occurs as a white crystalline powder, odorless and having a faintly bitter taste. It is freely soluble (1:8) in alcohol and slightly soluble (1:500) in water. It may be administered in the form of powder or, like sulphonmethane and sulphonethylmethane, dissolved in hot liquids.

Paraldehydum.—Paraldehyd, U. S. P. Paraldehyd, $C_6H_{12}O_3$, is a polymer of acetaldehyd and occurs as a colorless transparent liquid having a strong characteristic but not unpleasant or pungent odor and a burning and cooling taste. It is freely soluble (1:8) in water, and miscible in all proportions with alcohol. Paraldehyd is preferably administered with cracked ice or ice-water, but it is frequently objected to because of the odor which persists in the breath.

* Owing to lack of space the materia medica of sulphonmethanum, sulphonethylmethanum and sodio-diethyl barbituras has been omitted from THE JOURNAL. It will be included when this series is published in book form.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 909*)

XXIII

SCARLET FEVER (Continued)

PROPHYLAXIS

This primarily presupposes an early diagnosis, and such a diagnosis may be very difficult in atypical and mild scarlet fever. No single symptom can be depended on as diagnostic, and any one or more symptoms may be absent. An association of a reddened throat and a strawberry tongue and an eruption typical of scarlet fever appearing in twenty-four hours, with fever, of course makes the diagnosis positive. Food poisoning may cause an eruption similar to that of scarlet fever, but would not cause the reddened throat. The eruption of measles comes much later in the disease. The eruption of German measles may simulate the appearance of scarlet fever and is found early, and the diagnosis of German measles from a very mild scarlet fever may be difficult unless other cases of German measles have occurred, and contact with such was positive, and the postcervical glands were enlarged; such a mild case of illness and eruption should be considered scarlet fever until proved to be caused by some other disease. Even a history of a previous attack should not prevent the suspicion, as scarlet fever can occur more than once in the same person.

The following diagnostic test was first suggested by Rumpel, in 1909, then more carefully described and recommended by Leede,[10] and reported by Jampolis[1] as being present in 199 out of 200 cases. On account of having been found in a considerable percentage of well persons, it cannot be considered pathognomonic, but only a suggestive diagnostic sign. The test is made as follows: A passive hyperemia is caused by a broad rubber band placed around the arm, just above the elbow joint, not sufficiently tight to obstruct arterial flow. This band is loosened in about fifteen minutes, and the skin on the inner surface of the elbow joint, on being stretched until it appears anemic, will show petechiae if the reaction is positive. It has been suggested that this phenomenon is caused by changes in the walls of the capillaries. A negative reaction is perhaps a greater indication that scarlet fever is not present than is a positive reaction that it is present. It has not been shown that such a test would not be positive in various anaphylactic conditions.

It has not been shown that any vaccine or antitoxin is of value in preventing or curing scarlet fever.

Much more interesting, and with greater promise of value, is the report of W. S. Barker[11] of St. Louis that the blood serum of patients who have had scarlet fever may be of value when injected into those who are ill with the disease.

The general prevention of this disease in schools is very similar to the methods suggested under diphtheria, namely: As soon as a case of scarlet fever is reported to the board of health and board of education, other children in this family, children in the same house or tenement, the child's playmates, and the children who are in close contact with the infected child, either in the schoolroom or in classes, must all be

10. Leede: Münchén. med. Wchnschr., 1911, lviii, 293 and 1673.
11. Barker, W. S.: Arch. Pediat., August, 1914.

under suspicion. There is no object in taking any swabs from the throat, if the diagnosis of scarlet fever is positive, as no specific germ has been determined. The throats and tongues, however, should be inspected, and the temperature taken, and a record made of all possible contacts with the infected child within at least forty-eight hours of the child's becoming ill. It should be ascertained how many of these contacts have already had the disease, although, as previously stated, it not infrequently occurs more than once in the same individual. These contacts or possible contacts should not be allowed in school until one week from the time of their possible exposure. Children of the family, and frequently those from the same house, should not be allowed to attend school during the quarantine of the one infected unless they are sent to live in some other house or building. The measures taken to cleanse and clean the room in which the infected child sat are the same as described in diphtheria and measles. Fumigation is not needed. If more than one child in a given schoolroom comes down with the disease, that room might well be closed for a period of one week, not that the room could not be thoroughly cleansed of the infective germ in twenty-four hours, but lest "missed" or mild cases in this room will cause the disease in others. As soon as a week has passed, children who are well, and have not again been exposed to the disease, may return to school.

The quarantine of a child's home, or of the person infected, is of course that prescribed by the board of health of the city or town in which the patient lives. It has been the rule to continue the quarantine for from five to ten days after desquamation has ceased, and in some cities from six to seven weeks is the term of isolation ordered by the boards of health. Unless we believe that the skin disseminates the disease, such a length of time is entirely inexcusable and unjustifiable. Quarantine should be raised as soon as the throat is well, as soon as the fever has entirely disappeared and the acute eruption has ceased. When desquamation is well established or should have occurred (sometimes it occurs very late), the patient should be released from quarantine, the placard removed from the house, and the other children in the family allowed to return to school. The desquamating child should not attend school because he is in the midst of his convalescence and is not yet safe from possible nephritis.

Although in all probability the infective germ does not live long in the secretions of the throat after the acute stage is over, it has been thought that continued suppuration, whether in the tonsils, nose, sinuses, ear or glands, could cause scarlatinal infection of others. This is probably doubtful; but children with such suppurations should not only be properly treated and of course excluded from school, but also kept for a time from playing with other children.

There seems to be no good excuse for preventing the wage earners of a family in which the patient is at all properly isolated from attending to their ordinary vocations. A schoolteacher, a nurse, an attendant on other children, or one who is employed in some public institution should stop work temporarily, but after one week of observation without other contact with scarlet fever they may be allowed to resume.

In view of the belief that the infection occurs in the mouth, throat and nose, persons exposed to this disease should use gargles or sprays in the throat and sprays in the nostrils of some mild antiseptic solution three or four times a day for at least four days.

SYMPTOMS

This disease has a rapid invasion, except in very mild cases, with fever, sore throat, not infrequently vomiting, and there may be a convulsion in young children. The condition of the throat and the height of the temperature will give a quite definite indication of the severity of the disease, although mild cases may have very serious or troublesome complications. On the other hand, the temperature may be very high, and the type of the disease may be malignant.

Typically the eruption appears at the end of the first day, but may be present when the patient is first seen. It generally begins on the neck and chest (it may begin on the abdomen, or in the groins and axillae) and rapidly spreads over the whole body, and in a typically severe case the patient presents a scarlet hue from the forehead to the feet, and in this form the eruption is unlike that of any other disease. This bright color may gradually become darker, and in two or three days begins gradually to disappear. At its height the skin is markedly hyperemic, and any pressure renders it pale and anemic; but on removal of the pressure the color instantly returns, which is quite characteristic of this eruption. As soon as the acute stage of the eruption is past, the skin becomes rough and dry, and sooner or later desquamation begins, ordinarily the rash having entirely disappeared at the end of about a week. Punctate eruptions may be found in the roof of the mouth, very different from the Koplik spots found in measles, and the same reddish points may be found in the armpits and groins.

Unfortunately, the typical eruption described is often not present. The eruption may occur in patches, or on the chest only, or on or around some of the joints, and in mild cases the color of the eruption is not typical. Various irritations caused by food or drugs and various septic poisonings may produce eruptions that simulate that of scarlet fever. Frequently a doubtful case may be diagnosed by an associated inflammation of the throat, sore throat being absent in food and drug poisonings; but a septic sore throat may be associated with scarlatiniform eruption on the chest and abdomen. The cause of this eruption in many cases, however, is doubtless the drugs that have been administered, such as salicylic acid in some form, or some coal-tar product, or perhaps quinin. Some slight papular eruption may occur in scarlet fever, and there may be petechiae, and if the disease is malignant there may be large ecchymotic patches.

Many attacks are so mild that the diagnosis has not been made until desquamation begins; and, unfortunately, even desquamation may not occur, although desquamation may occur without much rash or eruption. Not infrequently a second desquamation may occur after the first has been practically completed. If the inflammation of the skin has been severe, not infrequently the epidermis comes off in pieces and patches, especially on the palms of the hands and the soles of the feet. Desquamation usually begins on the part first erupted, namely, on the chest and neck. It may be prolonged and tedious and last several weeks.

The characteristic tongue and the characteristic throat of scarlet fever need not be described, especially as they so greatly vary in appearance. The typical strawberry tongue may not be present. Also Kerley[12] states that the strawberry tongue is of little value: "I have seen it in many other illnesses." The inflammation

12. Kerley, C. G.: Personal Observation in Scarlet Fever, The Journal A. M. A., Oct. 24, 1908, p. 1407.

of the throat may vary from simple redness of the tonsils, pharynx and soft palate to masses of membrane in these regions and in the nasopharynx. These so-called anginoid cases are always serious and more likely to cause complications and septicemia. It may well be noted here that it has been repeatedly stated that scarlet fever may occur without any eruption on the skin; therefore a suspicious throat and tongue, with diphtheria excluded, may be an atypical scarlet fever. However, with our better understanding of septic sore throat, real scarlet fever without eruption is probably exceedingly rare.

The fever does not always cease with the eruption, and the patient may have a more or less prolonged, tedious fever, even without definite complications. Generally this fever is due to a septic suppurative process, and will persist until the pus is evacuated, whether it is in a gland, a sinus, an ear or elsewhere. Nasal and nasopharngeal inflammations cause the temperature to persist long. Relapse in scarlet fever is rare.

THE BLOOD

A few years ago Döhle[13] stated that he had found in the blood of thirty scarlet fever patients "certain inclusion bodies" in the polymorphonuclear leukocytes, and thought that they might be pathognomonic of scarlet fever. He did not find these after the sixth day.

Kretschmer[14] confirmed Döhle's findings, and Nicoll and Williams[15] also found these bodies in the blood smears of a majority of scarlet fever patients, namely, forty-five times in fifty-one cases. That these bodies are pathognomonic of scarlet fever was soon denied by Ahmed,[16] who found them in other septic processes. Later, MacEwen[17] showed that without doubt streptococcic infection plays a positive part in causing these inclusion bodies, but that a differential diagnosis of scarlet fever from measles and German measles may be aided by finding these bodies in conjunction with a leukocytosis. In measles, it will be remembered, there is a leukopenia. Still more recently, Isenshmid and Schemensky[18] have concluded, after reviews and investigations, that these inclusion bodies are found in the polymorphonuclear leukocytes in practically all cases of scarlet fever in the early stage. They are not found in diphtheria, measles, German measles or whooping cough. They may be found in pneumonia, and perhaps in various septic infections. These inclusion bodies may be of different forms, but the most characteristic form is triangular with a long tail-like end.

There is always a leukocytosis of the polymorphonuclear cells in scarlet fever. It begins early, reaches its maximum at the height of the disease, and then gradually diminishes, unless there is some septic complication. If the leukocytosis is high, the disease is either very severe, or there is pus formation somewhere. Tileston, in his investigations of the blood of scarlet fever patients, found that the cosinophils were diminished at the height of the fever and eruption, and gradually returned as the rash disappeared. He did not find that any prognostic inferences could be made from the number of eosinophils as suggested by Bowie.[19]

Dick and Henry[20] have found that the kind of organisms present in the throat and in blood cultures have also been discovered in the urine of scarlet fever patients, and they suggest that possibly the frequency of nephritis is due to the excretion of these living bacteria through the kidneys.

13. Döhle: Centralbl. f. Bacteriol., Nov. 23, 1911.
14. Kretschmer: Berl. klin. Wchnschr., March 11, 1912.
15. Nicoll and Williams: Arch. Pediat., May, 1912.
16. Ahmed: Berl. klin. Wchnschr., June 24, 1912.
17. MacEwen: Jour. Path. and Bacteriol., 1914, xviii, No. 4.
18. Isenshmid and Schemensky: München. med. Wchnschr., 1914, lxi, 1997.
19. Bowie, J. M.: Jour. Path. and Bacteriol., March, 1902.
20. Dick and Henry: Jour. Infect. Dis., July, 1914.

COMPLICATIONS

Complications are so many, and some of them occur so frequently, as to be almost a part of scarlet fever, and as many times they are the cause of death, they deserve more than passing mention. The seriousness of anginose scarlet fever has already been mentioned. The treatment of such a septic throat is not different from that already described for diphtheria. Nasal inflammation is a frequent concomitant symptom of serious scarlet fever, and frequently one or more of the adjacent sinuses are affected. Even in young children in whom the sinuses have been considered anatomically unimportant, they are likely to become infected, not only the maxillary sinus and the ethmoid cells, but even the frontal and sphenoidal sinuses. Hubbard[1] discusses these sinus complications, and quotes Killian as believing that some form of sinusitis is nearly always present when there is any severe rhinitis in scarlet fever. The danger of these inflammations of the various sinuses, especially of the ethmoidal and sphenoidal cells, is that a septic phlebitis or meningitis may occur, which conditions are of the most serious prognosis. Hubbard states that "meningeal invasion is less likely to follow ethmoidal than frontal sinus empyema." Even at the best when one of the sinuses adjacent to the nostrils becomes inflamed and suppurative, the condition is likely to become chronic and to heal slowly, even under the best treatment, to say nothing of the danger of bone necrosis.

Any method of treatment of the nose and throat that prevents clogging or blocking of discharges in the nose or nasopharynx tends to prevent sinus complications and middle-ear complications, and the frequency of the latter (namely, middle-ear inflammation) in scarlet fever is too common to require comment.

Next in frequency to nose and ear complications are involvement of glands of the neck. These glands readily suppurate during, or after, scarlet fever. This is distinct from the enlargement or inflammation caused by diphtheria. With no other apparent cause for the persistence of fever, when the eruption is abating, an enlarged gland should cause suspicion (especially if there is an increase in leukocytosis), that pus has already formed in this gland.

While albuminuria is frequently present during the height of the temperature, the complication of nephritis is not likely to occur before the end of the second week, and may even occur as late as the fourth week, and this complication not infrequently occurs after mild attacks of scarlet fever. Nephritis is stated to occur in from 10 to 20 per cent. of all cases. While a mild albuminuria and even a few casts may not infrequently be found, a real attack of a complicating nephritis is always serious. The concomitant symptoms are those of nephritis, and the prognosis and treatment is that of acute diffuse nephritis.

Cardiac complications of scarlet fever are not frequent, but in septic cases serious endocarditis or pericarditis may occur. Not infrequently one or more joints may be attacked and may suppurate. Suppuration of the joint is a serious complication.

(To be continued)

1. Hubbard, Thomas: Accessory Sinus Suppuration in Scarlatina, Am. Jour. Dis. Child., July, 1911, p. 11.

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SATURDAY, MARCH 20, 1915

DIET AND RESISTANCE TO DISEASE

Whether or not diet is likely to exert any specific influence in the direction of resistance to disease would probably be answered differently according to the momentary point of view of the referee to whom the question was propounded. Obviously, if the decision involved the comparative effect of food versus no food, it would be admitted promptly that inanition offers conditions which may profoundly alter the defensive powers of an organism. But even if energy is offered in abundance in the form of proteins, fats and carbohydrates, may we assume that the body ought to be enabled thereby to offer its most effective resistance to detrimental influences, provided, of course, that an adequate digestive apparatus insures the actual absorption and assimilation of the nutrients furnished?

Whereas one might have been ready to give an unhesitating affirmative answer to the foregoing question a few years ago, the advances in knowledge regarding what may be termed the specific effects of certain foods will occasion some uncertainty at present. With the demonstrated distinction between polished and unpolished rice as a determining factor in the production of the polyneuritis seen in beriberi, with the evidence of the peculiar effect of orange juice on the symptoms of infantile scurvy, with other alleged dietary etiologic agencies for so-called deficiency diseases in mind, it is not strange that we should hesitate to pronounce any final answer to the question at this time.

Here, as elsewhere in the medical sciences, experiment alone may lead the way to safe conclusions. The study of the rôle of foods from the dynamic and economic points of view must be supplemented by information regarding their specific action. Already there are indications that certain constituents of foods have an effect on growth greater than that which would be indicated by their calorific value. Intimations of an influence of special foods on certain glands of internal secretion have been current, thus establishing an indirect way of affecting the functions of the organism by modifying some of its supposed regulatory devices or organs. Reid Hunt[1] gave a stimulus to inquiries in this field by his researches on the subject here involved. He observed some very striking alterations in the resistance of animals to certain poisons produced entirely by changes in diet. Thus, of animals kept on diets such as are in daily use by man, some were able to resist many (up to forty) times the amount of certain poisons fatal to animals kept on other diets. Although the results with certain of these poisons probably have no relation to man, yet they show that man is doubtless daily producing profound effects on his resisting power to poisons and diseases, a knowledge of some of which may be of much practical importance. And it seems certain that by the use of some of these reactions, changes in metabolism which are not recognized by the methods ordinarily employed may be detected. These results are in striking contrast to the essentially negative results obtained by chemical analyses of individuals fed on different diets. From these data one would be inclined to argue for a fixity of animal organization.[2] By Hunt's procedure, more subtle alterations of "constitution" come to light. For instance, he noted that certain diets, notably dextrose, oatmeal, liver and kidney, greatly increase the resistance of mice to acetonitril; their effect is similar in this respect to the administration of thyroid. Hunt argues that the effect of an oatmeal diet in increasing the resistance of certain animals to acetonitril is probably due in part to a specific effect of the diet on the thyroid gland; this is an illustration of how an internal secretion may be modified in a definite manner by diet. Certain diets (notably eggs, milk, cheese and various fats) greatly lower the resistance of certain animals to acetonitril; their effect is the opposite of that of thyroid. Several glands (notably prostate, ovaries and testes) affect the resistance of animals to poisons similarly, but much less markedly than the thyroid. Other glands (thymus, parathyroid, suprarenals) have either no effect or an effect opposite to that of thyroid. Diet also caused a distinct, but not marked, difference in the resistance to morphin.

A similar attitude toward the possibility that an apparently unrelated factor, such as diet, may modify the effect of a toxic substance has prompted the newer investigation of Opie and Alford at the Washington University Medical School in St. Louis. Some of their experiments relating to the influence of diet on necrosis caused by hepatic and renal poisons have already been described in THE JOURNAL.[3] Animals

1. Hunt, Reid: The Effects of a Restricted Diet and of Various Diets upon the Resistance of Animals to Certain Poisons, Bull. 69, U. S. P. H. S., Washington, 1910.

2. Mendel, L. B.: Biochem. Ztschr., 1908, xi, 281.

3. Opie, E. L., and Alford, L. B.: The Influence of Diet on Hepatic Necrosis and Toxicity of Chloroform, THE JOURNAL A. M. A., March 21, 1914, p. 895; Influence of Diet on the Toxicity of Substances which Produce Lesions of the Liver or the Kidneys, ibid., July 11, 1914, p. 136; The Influence of Diet upon the Necrosis Caused by Hepatic and Renal Poisons, Part I, Diet and the Hepatic Lesions of Chloroform, Phosphorus, or Alcohol, Jour. Exper. Med., 1915, xxi, 1; Part II, Diet and the Nephritis Caused by Potassium Chromate, Uranium Nitrate, or Chloroform, ibid., p. 21.

were fed on a diversity of diets differing essentially in their content of carbohydrate, fat and protein. Lesions were then produced in the liver by substances such as chloroform, phosphorus or alcohol, which have a peculiar affinity for the parenchymatous cells of the organ; or in the kidney by chromates, uranium nitrate or chloroform, which produce necrosis of parenchymatous renal cells. A study of the histologic changes in animals which died shows that susceptibility to these various poisons is dependent on the varying extent of necrosis in the liver or kidney induced by diet. All of the harmful substances were more toxic to animals which had received a diet of meat than for those subsisting on a ration consisting in great part of carbohydrate in the form of oats and cane sugar.

The St. Louis pathologists have attempted to correlate their results with the known facts in relation to diet and metabolism. Carbohydrates tend to prevent the disintegration of body protein. They diminish the amount needed to maintain nitrogenous equilibrium in the organism, and consequently may reduce the elimination of nitrogen. If the necrosis produced by chloroform, phosphorus, etc., is the anatomic expression of advanced disintegration of body protein, a diet rich in carbohydrates may tend to limit this necrosis by protecting the body protein. Excess of protein in the diet, on the other hand, as shown by clinical and experimental evidence, is well known to increase metabolism as exhibited in its so-called specific dynamic action.

The explanation offered by Opie and Alford for the diminished susceptibility to intoxication after a diet rich in carbohydrate is interesting even if it is based on little more than analogy. There is a resemblance between certain human lesions and those produced by the toxic substances employed in the laboratory. We are reminded that toxemia of pregnancy, acute yellow atrophy of the liver and certain bacterial infections are characterized by necrosis of parenchymatous cells of both liver and kidney;[4] and a localized necrosis of hepatic and other cells is known to occur in numerous other diseases — eclampsia, malaria, diphtheria and typhoid fever. In a practical way we are reminded, therefore, that an abundance of carbohydrate may prevent the occurrence or retard the progress of these conditions. It would therefore seem to be not without advantage that carbohydrates are among the most easily administered and digested food products.

In contemplating researches of the character which we have outlined, one cannot escape the conviction that experiments of this sort will sooner or later help to unravel the secret of those vague entities described as "constitution," "diathesis" and "the resisting power of the individual."

4 Opie, E. L.: Jour. Med. Research, 1904, xii, 147.

THE ETIOLOGY OF TRACHOMA

A short time ago trachoma in this country was regarded as an exotic disease. Guardianship, to prevent its introduction by immigrants, is still necessary; but we have learned now, largely through investigations of the Public Health Service, that trachoma is prevalent in many sections of the United States. Each year it becomes a more important and difficult public health problem. Our lack of knowledge of its real nature renders uncertain our efforts to establish a rational and intelligent prophylaxis.

In studying the etiology of trachoma, the diagnostic confusion which exists concerning it has caused some earnest students to deny that the disease is a morbid entity, and to assert that it is simply the reaction of the conjunctiva, under certain circumstances, to some of the well-known bacterial infections, such as the gonococcus or Koch-Weeks bacillus.[1] Axenfeld[2] recently has probably expressed the generally accepted opinion. He affirms the "etiologic unity" of the affection. The common bacterial infections are readily implanted on a trachomatous base, and these mixed infections furnish many of the "acute" trachomas. From the barren results of much bacteriologic investigation, however, it seems easy to assume that the cause of trachoma will probably not be found among the bacteria as we now know them.

The infectiousness of trachoma is hardly open to doubt. Perhaps all authorities are agreed that it is a communicable disease spread by more or less direct contact. This view not only rests on clinical observation, but also has been demonstrated by the experimental method in both human beings and animals. Neither the degree nor the duration of its contagiousness is understood. The determination of these points would not be a simple affair, since trachoma is not readily inoculable into the lower animals. The smaller animals do not seem to be at all susceptible, and few species of the lower monkeys have given any positive results. The higher monkeys, such as chimpanzees and orang-utans, are reported as successfully inoculated by several workers, but the disease as reproduced is of a benign type, undergoes spontaneous healing in a comparatively brief time, and seldom shows any scar formation.

The virus of trachoma is probably feeble and withstands unfavorable influences poorly. The numerous observations as to the slow and uncertain manner in which the disease spreads among families or other closely associated persons, as well as the important influence of poor hygienic surroundings and lowered resistance from any cause, are good evidence to this effect. Moreover, cases are not rarely observed in which the disease remains confined to one eye despite

1. Williams and Others: A Study of Trachoma and Allied Conditions in the Public School Children of New York City, Jour. Infect. Dis., 1914, xiv, No. 2; abstr., THE JOURNAL A. M. A., April 18, 1914, p. 1285.
2. Axenfeld, T.: Die Aetiologie des Trachoms, Fischer, Jena, 1914, with bibliography and colored plates.

the large opportunity offered for infection of the other eye.

Notwithstanding experiments, both human and animal, the question of the filterability of the virus remains undetermined. Experimental evidence available permits no more than the suspicion that the virus may be filterable under some circumstances, that is, during some stage of the life history of the causative organism.

There seems to be no real immunity, either congenital or acquired. Much has been written in this connection about "disposition," "constitution," race and climate, but a careful estimation of such factors, while it does not entirely eliminate their importance, scarcely permits us to infer that they correspond to an immunity in the strict sense of the word.

Of all the numerous bacteriologic and microscopic studies of trachoma, only one positive finding has been accepted: the discovery by Prowaczek[3] in 1907 of the so-called inclusion or trachoma bodies. The nature of these bodies, however, and their possible etiologic relation to trachoma, still remain undetermined. Lindner[4] has described another form of these bodies, but this has added little to our knowledge. Noguchi and Cohen[5] have recently reported the successful culture of these inclusion bodies, but since the cultivated bodies proved non-pathogenic, the question still remains an open one. The question of the nature of these Prowaczek inclusion bodies is quite similar to the one provoked by the discovery of the Negri bodies in rabies, the old question as to whether such bodies are to be viewed as cell changes of some character without etiologic significance, or whether they are of a parasitic nature and of real importance in the causation of the disease.

Even if we accept it as highly probable that these bodies are living micro-organisms—and this is by no means assured—there are two very important facts which stand in the way of their acceptance as the probable cause of trachoma. First is the noteworthy fact that their presence in trachoma is by no means constant. Out of a total, for example, of 771 cases examined by various workers, 52 per cent. were found positive among "fresh" cases, and 12.5 per cent. among older cases.[2] In the latter group may perhaps be found many "scarring" cases, which always seem to offer the smallest number of positive results. Second is the equally noteworthy circumstance that inclusion bodies have been found in other conditions than trachoma, and on other mucous surfaces than that of the eye, and are even reported as occurring on normal mucous membranes. Their chief seats, however, appear to be confined to trachoma and to "inclusion conjunctivitis" of the new-born, along with the genital tracts associated with the latter. Indeed, apparently they are found more freely and more constantly in "inclusion conjunctivitis" of the new-born than in trachoma itself. This has naturally raised the question of the identity of these two diseases, but so far neither clinical nor experimental evidence will permit such a conclusion.

In the midst of so much confusion and uncertainty it is difficult, indeed impossible, to form definite conclusions. Axenfeld,[2] in his careful and sympathetic review, concludes that the inclusion bodies of Prowaczek are in all likelihood micro-organisms of some kind, although certainly different from any bacterial forms known to us; but that evidence for any specific etiologic value for them is still wanting. He directs attention to the importance of "inclusion blennorhea" of the new-born, and recommends a wider study of the entire question of "inclusion virus." "That line of work," he says, "which for the present gives greatest hope of success is a more thorough study of the Prowaczek inclusion bodies, especially with reference to pathologic anatomy and zoology, along with a critical consideration of all the possibilities involved." A careful examination of these bodies, and of the questions raised by their discovery, "holds out the hope not only of further advance, but perhaps even of the final solution of the trachoma problem itself."

The rapidly growing importance among us of this subject now not only invites but also demands the attention of American investigators. Before further progress can be made, we must look to the laboratory for fuller knowledge of the real nature of this disease. It is a question which up to now has baffled the best efforts of many able and earnest workers.

3. Halberstädter and Prowaczek: Deutsch. med. Wchnschr., 1907, xxxiii, 1285; Arb. a. d. k. Gsndhtsamte, 1907, xxvi, 44.

4. Lindner: Die freie Initialform der P. Einschlüsse, Wien. klin. Wchnschr., 1909, xlix, 1697; Arch. f. Ophth., 1910, lxxvi, 559.

5. Noguchi and Cohen: Experiments on Cultivation of So-Called Trachoma Bodies, Jour. Exper. Med., 1913, xviii, No. 5.

ASSUMED DANGERS DURING VOMITING

Vomiting is one of the symptoms which attend a large number of ailments, and is therefore frequently encountered in general practice. To the physiologist it is of interest as an example of a complicated reflex act in which various sensory nerves and other parts of the nervous system, certain efferent motor nerves, and perhaps a definite vomiting center are concerned. The pharmacologist, who has to deal with emetics, has devoted attention to the parts of this complex mechanism on which the individual examples of this class of drugs may act. To the practitioner, however, vomiting is in general merely an indication of some disturbance, the cause of which he must discover and eliminate, if possible. There are numerous disorders, not only of a gastro-intestinal or abdominal character, but also of cerebral origin, in which the occurrence of persistent emesis is of considerable diagnostic importance.

There is a widespread assumption that the blood pressure is greatly augmented during vomiting. It is believed that clinical literature contains a good many indirect references to this subject,[1] and physicians are warned not to give emetics to patients whose arteries are atheromatous, in view of assumed danger of a rupture of the blood vessels. Actual evidence bearing on this somewhat prevalent belief is hard to find. Here, as so often happens, the proof of direct experiment has clearly been called for; and the subject has received an investigation in respect to the mechanism of the changes in the blood pressure during vomiting and its control during such times, at the hands of Brooks and Luckhardt.[1] They believe that there are different types of vomiting, the variations depending principally on the character of the drug employed, or upon the consistency of the gastric contents or the degree of participation of the skeletal musculature or of the diaphragm or the gastro-intestinal musculature, respectively. In general, two distinct types of vomiting may manifest themselves. First, there is the rapid projectile type, characterized by suddenness of onset, with slight premonitory symptoms, and with apparently a preponderance of gastro-intestinal tract activity over the activity of the skeletal muscular system. Second, there is the slow, labored type of vomiting characterized by rather marked premonitory symptoms and with apparently more of the skeletal muscles taking part in the process, which consists of prolonged violent retching movements. Meanwhile there are great oscillations of the blood pressure.

As a result of the detailed study of vomiting induced by digitalis or apomorphin given subcutaneously, or by zinc sulphate or magnesium sulphate administered orally, Brooks and Luckhardt have ascertained that vomiting is accompanied by marked changes in the circulatory system and interference with respiration. There is seen sometimes a period of elevated pressure. More frequently, however, and contrary to inherited expectations, one witnesses a sudden and enormous drop in blood pressure, with cardiac inhibition at the moment of emesis, but always periods of great oscillations in the blood pressure. These great and sudden oscillations of the blood pressure may cause a rupture of blood vessels which would not occur with the same pressure, but with slower changes. The faint feeling accompanying emesis may be the result of the cerebral anemia occasioned by the cardio-inhibition and resulting drop in blood pressure. The danger of damage to the vascular system is not minimized by these newer investigations; but the responsibility for possible harm is shifted from hypertension to the sudden variations in the condition of the circulatory apparatus.

1. Brooks, C., and Luckhardt, A. B.: The Blood Pressure During Vomiting, Am. Jour. Physiol., 1915, xxxvi, 104.

THE PROBLEM OF FATTY DEGENERATION

The problem of true fatty degeneration, as contrasted with the fatty infiltration of organs, long ago resolved into the question whether or not fat can be formed directly from protein in tissue cells. If the proof of the latter transformation is forthcoming, the chemistry of possible fatty degeneration will be more clearly understood, and, conversely, the unimpeachable demonstration of actual fatty degeneration must be accepted as strong evidence of the ability of an organism to produce fat out of protein. The story of the shifting views which have been held on this subject from year to year, the supposed proofs of the validity of each contention, the successive disillusionments and counter-proofs, the battles of words reinforced by conflicting experimental evidence — all of this forms one of the interesting chapters in the progress of the medical sciences. The following summary, will, we believe, be accepted as a fair statement of the present status of the subject: It is agreed that carbohydrates and glycogen, as well as sugar, can be formed from protein. The fact cannot be denied that possibly an indirect formation of fat from protein, with carbohydrate as an intermediate step, can take place. The possibility of a direct fat formation from proteins without the carbohydrate as intermediary must also be generally admitted, although such a formation has not been conclusively proved.

When the advance of experimental science encounters a stumbling block in its path, it usually requires the advent of new methods of research to clear the way for further progress. The chief excuse for recurring here to the much-discussed theme of fatty degeneration lies in the opportunity which more recent procedures have given for a promising reinvestigation of its problems. The perfected perfusion of vital organs with suitable circulating mediums, and the consequent retention of function for periods of time impossible a few years ago, have made it possible to study certain tissue changes *in situ*, so to speak, without the complicating factors introduced by the indirect participation of other organs through the medium of the circulation. The perfusion fluid may be blood or a simple Ringer's solution; it can be regulated and analyzed at will.

The perfusion method has been drawn on in the Medical Clinic at Greifswald to contribute to the problem under discussion. Gross and Vorpahl[1] have permitted isolated kidney to be maintained for some time under suitable conditions of survival. In some of these there was what they regard as an indisputable increment of true fat. It was appreciable microscopically as well as chemically, and particularly so when

1. Gross, O., and Vorpahl, F.: Beitrag zur Lehre von der Verfettung parenchymatoser Organe, Arch. f. exper. Path. u. Pharmakol., 1914, lxxvii, 317.

glycerol was added to the perfusing liquid, which was fat-free Ringer's solution. The requisitioning of the glycerol is interesting in view of the contention that the production of the fatty acids was possible even when precursors of glycerol were not present. Obviously, both of the antecedent components of fats are necessary to produce the neutral glycerids. Gross and Vorpahl look on their new experiments as proof of the formation of fatty acids from proteins by living cells. Their suggestive work now awaits confirmation.

ADDITIONAL NARCOTIC LAW REGULATIONS

Additional regulations concerning the Harrison Narcotic Law were issued by the Commissioner of Internal Revenue under date of March 9. They appear in the Treasury Decisions for March 11. These rulings are supplementary to the Internal Revenue Regulations, No. 35, issued January 15. The two sets of regulations include all the rulings made up to date. There are several points which should be noted by physicians.

Liniments, ointments or other preparations containing drugs not specifically exempt, used for oral, nasal, aural, ocular, rectal, urethral and vaginal administration, are not regarded as being used externally and are therefore not exempt from the provisions of the law regarding the external applications. A rule of great importance to specialists provides that physicians or dentists administering minute quantities of the drugs included under the law in their offices may keep a record of the date when a stock solution is made and the date when such stock solution is exhausted, without keeping a record of the name and address of each patient to whom such drugs are administered. This plan will be allowed only in the case of those physicians and dentists who use minute quantities of these drugs. Under this rule, the specialist in diseases of the eye, ear, nose and throat, etc., doing an office practice and using one, five and ten per cent. solutions of cocain as a routine procedure will not be required to keep a record of each patient on whom these solutions are used. He will be required simply to keep a record of the date when his stock solutions are made up and the date when they are exhausted, with, presumably, a record of the quantity of solution made up and the quantity of drugs it contained. Evidently the object of the regulation is to restrict the use of such solutions to legitimate purposes with the least possible amount of interference to the physician. This ruling clears up a point on which a large number of inquiries have been received. A physician engaged in general practice who administers such drugs is required to keep a record of the name and address of the patient, of all drugs dispensed, distributed or administered in his office, and of such drugs left with the patient to be taken in his absence. With the exceptions noted above, only such drugs as are personally administered by a physician to a patient and away from his office are exempt from record.

In the regulations just issued appears for the first time the official ruling defining personal attendance. According to this, a physician must actually be absent from his office and in personal attendance on a patient to come within the exemption specified in Section 2 of the law. Drugs dispensed to a patient in the office or left at a patient's home to be taken during the absence of the physician must be recorded.

Druggists filling prescriptions or order blanks calling for any of the specified drugs are not required to demand a receipt for them. Educational institutions using the specified drugs in laboratories and for other purposes must register, pay the special tax and keep a record. The exemptions in Section 6 by which certain preparations containing the minimum quantity of specified drugs are exempt from the provisions of the law are held to apply only to United States Pharmacopeia standard preparations or to remedies prepared under private formula such as are usually carried in stock by druggists and dispensed without prescriptions and not to pseudopreparations or remedies prepared and sold on account of the narcotic drugs which they contain. Druggists having reason to believe that any prescriptions presented to them are forged or that the quantity of drug prescribed is unusually large should, before filling such prescriptions, satisfy themselves that the prescriptions are genuine and are properly prepared.

Inventories showing the amount of drugs on hand on March 1 must be retained by the person making the inventory and not sent to the Collector of Internal Revenue. Such inventories must be sworn to.

The provision in the law requiring physicians to sign their full name to a prescription is defined as meaning that they must sign their prescriptions in the same way that they would sign a check or a legal document, i. e., with their ordinary business signature. Nurses are not allowed to register and can have narcotic drugs in their possession only under the direction of registered physicians. They can obtain supplies of such drug only on a registered physician's prescription, and only when nursing patients of such physicians.

Ointments, liniments, etc., intended for external use must be denatured or rendered unfit for internal administration. Order forms are not to be used as prescription blanks, but only for obtaining supplies of drugs from dealers. Paregoric prepared according to the United States Pharmacopeia standard contains not quite two grains of powdered opium to the fluid ounce and is therefore exempt.

Where two or more physicians are in partnership doing business under a firm name, it is necessary for the firm to be registered, and the registry number to be indicated in ordering drugs for use in office practice.

Each individual physician must also register and pay the special tax under his own name if he is engaged in private practice on his own account. Physicians maintaining an office in more than one internal revenue district must register in each district, but if not maintaining more than one office, registration in one district permits him to practice in any other district. Physicians may use any prescription blank provided it is properly dated and signed and contains the physician's address, his registry number and the name and address of the person for whom the prescription is written. The government does not furnish prescription blanks or prescription blank forms.

The following persons are eligible to registry provided they are legitimately engaged in the practice of their profession in accordance with the laws in the state in which they reside: persons engaged in the practice of medicine and surgery, persons engaged in the practice of dentistry, persons engaged in the practice of veterinary medicine and surgery, persons engaged in the importation and sale of drugs or the manufacture of drugs at wholesale or retail. Osteopaths, unless classed as physicians in accordance with the laws of the state in which they reside, will not be permitted to register under this law. Special tax stamps must be posted in a conspicuous place for every person registered under the law.

Current Comment

INOCULATION AGAINST CHICKENPOX

In the early part of the last century, numerous efforts were made to transfer chickenpox in the same way that vaccinia is transferred, but with altogether negative results. Recently, however, Kling[1] in Stockholm has obtained positive results without any special difficulty, the inoculated disease being as a rule simply a local reaction, but nevertheless protective against the natural disease. Kling believes that the reason he is succeeding where others have failed lies in the method employed. The virus should come from an absolutely healthy child, above all, of course, free from syphilis and tuberculosis, and it should be the clear content of a fresh vesicle in as early a stage as possible both of the disease as well as of the vesicle itself. Kling inserts the point of a sterile lancet into a vesicle like this and then simply sticks the point into the skin of the child to be inoculated, the skin previously cleansed being held taut, and the effort made to insert the virus into the skin without necessarily drawing blood. When two or three such insertions are made, new virus is taken, the inoculations being repeated six times in each case. It seems that in at least some cases of failure too few inoculations probably were made, because by no means all the separate inoculations in a given case will take. The area inoculated (Kling uses the left arm) is bandaged properly. The mild traumatic reaction subsides in a day or two, and if the result is positive, on the eighth day as a rule one or more red papules develop in the inoculated area, the papule in a day changing to a vesicle which increases in size for two or three days, and then dries up into a scab which eventually falls off, leaving an insignificant scar. Occasionally several vesicles may appear in succession and Kling has inoculated successfully from one individual to another for five generations. Kling now has inoculated 135 cases with failures in 23 per cent. In only ten instances was there any eruption outside of the area on the arm, and three instances of a really generalized eruption. As a rule there have been no general disturbances; occasionally a slight fever. It appears, then, that inoculated chickenpox is a mild local disease, and the question at once arises, Is this disease followed by protection? There is no doubt that protection is established, because in the children's hospital in which Kling is working, none of the inoculated children have acquired chickenpox, while of 108 that were not inoculated, 73 per cent. acquired the disease. Hence "varicellation," as Kling calls the inoculation, is a good means of prevention that may prove of practical value, especially in institutions in which chickenpox sometimes is a serious disease.

1. Kling: Hygiea, 1913, lxxv, 1032; Berl. klin Wchnschr., 1913, L, 2083; ibid., 1915, lii, 13.

THE ETIOLOGY OF YELLOW FEVER

The first person who suggested the possibility of the mosquito being in any way connected with the etiology of yellow fever will probably never be definitely known. Undoubtedly Finlay was the first to advance the positive hypothesis that the mosquito was the sole transmitter of the disease, although he failed to prove his theory. It was largely due to his pioneer work that the investigation of Reed, Carroll and Lazear was undertaken. Since the mosquito theory has been placed on an uncontrovertible basis, the practical prevention of epidemics of the disease has been possible. A specific cure of individual cases and the eradication of endemic foci are the two things yet needed to complete the mastery of the problem. The chief difficulty is the identification of the causative organism, which has so far been persistently elusive. In a summary of our knowledge of the etiology of the disease, Camerer[1] notes that many men are still actively engaged in looking for the ultimate etiologic factor. Thomas, in 1907, succeeded in inoculating a chimpanzee by the bites of infected mosquitoes. Three days later a typical attack of yellow fever occurred. As a sort of corollary to this experiment, Balfour has recently advanced the hypothesis that the "reservoir of infection" may be found in certain tribes of monkeys. He bases his belief on the fact that in certain localities prior to an outbreak of yellow fever, monkeys of the "red howler" (*Mycetes siniculus*) tribe have been found dead or dying in the nearby forests, apparently as the result of some disease with symptoms allied to those of yellow fever. In this connection, it is worthy

1. Camerer, C. B.: A Résumé of Etiological Factors Concerned in Yellow Fever, U. S. Naval Med. Bull., January, 1915.

of note that endemic yellow fever is now found only in regions in which monkeys abound. If it could be proved that the monkey bears some such relation to yellow fever as the rat to plague, it would not only give us the proper cue for eradication of endemic foci, but would also afford great opportunity to conduct experiments looking toward the identification of the causative organism. That this etiologic factor is a living organism seems indisputable. As Camerer observes, the fact that a certain specific time is necessary for its development both in man and the mosquito rules out the possibility of its being of chemical nature. Not only does all the evidence point to a living organism as the cause, but there is presumptive evidence that it is some form of protozoal rather than bacterial life, because the cycle of development in the mosquito is inhibited by low temperature, and takes place best at a constant temperature of 30 C. (86 F.). Parker has advanced the theory that the life cycle is somewhat similar to that of the malarial organism, with the sexual and asexual cycles reversed, the former occurring in man, the latter in the mosquito.[1] What with the known facts in regard to its transmission and the reasonable hypotheses relative to the specific nature of the etiologic factor, together with the sustained interest in the subject, it is not too much to hope that we are approaching the final solution of the mysteries with which yellow fever has been so long enshrouded.

THE IDENTITY OF THE BOAS-OPPLER BACILLUS IN GASTRIC CANCER

The stomach contents derived from persons suffering from gastric cancer frequently disclose the presence of a large, non-motile, acid-forming Gram-positive micro-organism, to which attention was called by Oppler and Boas[2] in 1895, and which is familiarly known in clinical literature as the Boas-Oppler bacillus. The importance of the finding of this organism in the cases examined rests on the assertion that it is present in sufficient frequency to furnish valuable corroborative evidence of the existence of malignant disease, as contrasted with other pathologic conditions, such as a benign stenosis of the pylorus. There is some difference of opinion as to whether the Boas-Oppler type of bacilli is never found in the non-malignant forms of gastric disease, and organisms closely resembling it have occasionally been observed in chronic gastritis. Nevertheless, there is a widespread belief in the significance of the Boas-Oppler bacillus in the differential diagnosis between malignant and non-malignant manifestations of the stomach. The conditions which prevail where the Boas-Oppler bacillus is found are such as attend the absence of hydrochloric acid from the stomach. The lack of this antifermentative agent favors the development of lactic acid producing organisms. The lactic acid itself exerts an inhibitory influence on the growth of most organisms. A recent investigation from the Stephen Ralli Memorial Laboratory in the Royal Sussex County Hospital at Brighton, England, suggests that the morphologic resemblances and the power of multiplying in strongly acid mediums bring the Boas-Oppler bacillus within the same category as certain acidophil bacteria which have gained much prominence in the past few years.[3] The representative member of the group, the *Bacillus bulgaricus*, has been called into prominence in connection with its involvement in the production of soured milk. Closely related are the *Bacillus acidophilus, B. gastrophilus* and *B. bifidus*. The possible identity of these varieties must be borne in mind.[4] Specimens of the Boas-Oppler bacillus were obtained by Galt and Iles[3] from definite cases of carcinoma of the stomach; in these, free hydrochloric acid was absent and lactic acid present in the stomach contents. After a comparison of the morphologic and cultural characteristics after cultivation under standard conditions with those of a known strain of the *Bacillus bulgaricus*, the conclusion was reached that the bacillus found in gastric cancer is identical with this and not an organism *sui generis*. The inference was drawn that in such cases it is the absence of the hydrochloric acid that allows the growth of the bacillus, and that the lactic acid is formed as the result of the activity of this organism.

2. Oppler and Boas: Deutsch. med. Wchnschr., 1895, xxi, 73.

3. Galt, M. H., and Iles, C. C.: A Study of the Boas-Oppler Bacillus, Jour. Path. and Bacteriol., 1914, xix, 239.

4. Heinemann and Hefferan: Jour. Infect. Dis., 1909, vi, 304.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CONNECTICUT

Personal.—Dr. and Mrs. William J. Sheehan, New Haven, who went to Paris in October of last year as volunteers for service in the American Ambulance Hospital, have returned. ——Dr. Erastus P. Swasey, New Britain, who has been under treatment in the Charter Oak Hospital, Hartford, is showing improvement and has returned home.——Dr. Charles J. Bartlett has been elected president of the Board of Health of New Haven, vice Dr. John F. Sullivan, New Haven, who declined reelection.

ILLINOIS

Personal.—Dr. Glenford L. Bellis, head of the Cook County Tuberculosis Hospital, Oak Forest, has been appointed superintendent of the new Milwaukee County Tuberculosis Sanatorium and will assume charge April 1. ——Drs. Whedon W. Mercer, Peoria, and E. O. Jacoby of the medical staff of the Anna State Hospital, have resigned. ——Dr. Frank R. Frazier, Yorkville, was operated on for appendicitis in the Presbyterian Hospital, Chicago, March 3.

Chicago

Medical Woman's Club.—At the meeting and dinner of the Medical Woman's Club of Chicago, March 10, Dr. Joseph B. DeLee was the speaker and Dr. and Mrs. Frederick Tice and Miss Grace Abbott of the Immigrant's Protective League, were the guests of honor.

Personal.—Dr. Cyrille Vermeren has been appointed Belgian Consul in Chicago.——Dr. William E. Buehler has resigned from the presidency of the Public Safety Commission of Chicago and Cook County.——Dr. Anthony Biankini was elected president of the Croatian League at its meeting March 11.

Sanatorium Opened.—The Chicago Municipal Tuberculosis Sanatorium was opened to admit patients March 9 and eight patients, six women and two men, were admitted. Persons who desire to obtain admittance to the sanatorium should

communicate with the loop office of the institution at 105 W. Monroe St., or with one of the ten dispensaries distributed throughout the city.

Organization of Postgraduate Bureau.—The Chicago newspapers of the past week have contained rather sensational announcements concerning a plan to make Chicago the "Medical Center of the World," through the organization of a postgraduate school. As far as we are able to learn the tentative plan, as at present outlined, simply proposes the establishment of a central bureau for the listing of clinics day by day, similar to the plan now prevailing in New York and Philadelphia. The movement, however, is in the preliminary stage only.

Health Exhibits.—The Chicago Health Department began on March 9, an aggressive propaganda along the lines of health conservation, sanitation and general welfare and education. Simultaneous exhibits are being made in six centers in the city, namely, the Central Y. M. C. A. Building; the Sears-Roebuck Y. M. C. A. Branch; Hyde Park Y. M. C. A. Branch and the Parkman, Clark and Agatha schools. The exhibit includes contagious diseases, infant welfare, food inspection, sanitation, hospitals and laboratory and vital statistics. Each of these exhibits is continued in rotation at the centers named. Lectures will be delivered at the Central Y. M. C. A. daily between 12 and 1 o'clock and at the other centers twice daily with moving pictures and stereopticon views.

INDIANA

Free Clinic.—A free clinic for the examination and treatment of tuberculosis patients has been established in New Albany by the Floyd County Medical Society, Anti-Tuberculosis League and Social Welfare Association. The opening of the clinic took place on March 8, and it will be open on Monday, Wednesday and Friday mornings from 9 to 10 o'clock.

Personal.—The office of Dr. Franklin F. Mendenhall, Elwood, was robbed March 10, the robbers limiting their depredations to narcotic drugs only.——Dr. Carlos C. Rozelle, La Grange, has been elected president and Dr. Amos J. Hostetler, La Grange, secretary of the La Grange County Anti-Tuberculosis Society at its meeting February 26.——Dr. John N. Hurty, Indianapolis, was elected president and Dr. William F. King, Indianapolis, secretary-treasurer of the Indianapolis Sanitary Water Supply Association at its eighth annual meeting in Indianapolis, February 25.——Dr. Clarence G. Rea has succeeded Dr. Noah D. Berry, resigned, as secretary of the Muncie Board of Health. ——Dr. Forrest A. Chenoweth, Winchester, fractured two ribs while cranking his automobile recently.

Honor Hurty.—The most notable assembly of physicians in Indiana for many years was at the Claypool Hotel, Indianapolis, March 13, in honor of the nineteenth anniversary of the appointment of Dr. John N. Hurty as state health commissioner. Governor Samuel R. Ralston was the toastmaster. An address was made by Thomas R. Marshall, vice-president of the United States, who presented an elaborate vase to Dr. Hurty from his friends in the profession. Dr. Alexander R. Craig, secretary of the American Medical Association, Chicago, spoke on the "American Medical Association and Sanitation;" President William E. Stone of Purdue University, Lafayette, spoke on "Health a Great Asset of Life;" Dr. Victor C. Vaughan, Ann Arbor, Mich., president of the American Medical Association, on "The Well-Born Child and the State;" President William Lowe Bryan of Indiana University, Bloomington, on "Public Schools and Public Health;" Dr. William A. Evans, former health commissioner of Chicago, on "The Turbulent Life of the Health Officer;" Dr. George T. McCoy, Columbus, ex-president of the Indiana State Board of Health, on "Educational Work of the Health Officer and the Health Officers' School;" Dr. Frederic C. Heath, Indianapolis, gave an original poem, "The Life Saver." Mrs. Vida Newsom, president of the Indiana Federation Women's Clubs, Columbus, spoke of "The State Federation and Health Officers' Work." The final address was one of appreciation by Dr. Hurty himself. Several hundred physicians from Indiana and other states attended the banquet.

KENTUCKY

County Society Incorporated.—Articles of incorporation of the Warren County Medical Society were filed March 4, the incorporators being Drs. Will F. Arnold, Bowling Green; John H. Blackburn, Bowling Green; Frederick D. Cartwright, Bowling Green; James W. Lewis, Oakland; Finis London, Woodburn; Frederick D. Reardon, Bowling Green; Benjamin S. Rutherford, Bowling Green; Thomas W. Stone, Bowling Green, and Burnett W. Wright, Bowling Green; and E. D. Rose, D.D.S., and J. A. Wallace, V.S.

State Board Election.—At the annual meeting of the State Board of Health, February 16, the following officers were reelected: president, Dr. John G. South, Frankford; vice-president, Dr. Charles Z. Aud, Cecilia; secretary, Dr. Arthur T. McCormack, Bowling Green. Drs. South and Aud were appointed a committee to confer with the faculty of the University of Louisville and the Council on Medical Education of the American Medical Association, regarding preliminary requirements for medical students.——The state vaccination rule was so amended as to make it apply to employees of business concerns other than corporations.

Personal.—Dr. James V. Prewitt and daughter, West Point, March 2, were attacked by a bulldog supposed to be rabid, and are now under treatment at the State Pasteur Laboratory, Bowling Green.——On the occasion of his eighty-second birthday anniversary, March 2, Dr. Urbane V. Williams, Frankfort, was the guest of honor at a banquet given by medical men of Frankfort and Franklin County, at which 150 were present, and Dr. Louis Frank, Louisville, was toastmaster.——In the case of Dr. Charles E. Francis, Richardsville, and John H. Blackburn, Bowling Green, against whom suit for $10,000 for alleged malpractice was brought by J. J. Miller and Mrs. Carrie Miller, Richardsville, a verdict was rendered in favor of the defendants, February 24.

Hospital News.—For the benefit of the Jennie Casseday Rest Cottage, Louisville, a playlet, "Wang May, China's Peach Blossom," was given twice in Louisville recently. The playlet was written by Dr. John D. Trawick, who spent several years in China as a medical missionary, and who also took part in the play.——A hospital is to be established in Jackson, with a capital stock of $5,000. Its support will be largely derived from the Chesapeake and Ohio Railway Company and the local companies.——The Red Cross Hospital for Colored People, Louisville, was formally opened, February 15.——During the first year of the occupancy of the new buildings of the Louisville City Hospital, 5,093 patients were treated.——Citizens of Menifee County have started a fund to erect a hospital at Frenchburg, for which about $15,000 will be required.

LOUISIANA

Dr. Dowling Becomes a Benedict.—Dr. Oscar Dowling, president of the State Board of Health, was married March 16, to Mrs. Lula Tindall George at Monroe. Dr. and Mrs. Dowling are spending a few days in Monroe and will then be on the health train for its next tour. Their permanent home will be in Shreveport.

The New Sickles Fund Commission.—For the lack of a quorum, what should have been the last meeting of the Sickles Fund Commission was not held February 23. The ordinance providing for a new commission, to be composed of Commissioner of Public Safety Newman, Dr. William T. O'Reilly, superintendent of public health in New Orleans, and a physician to be named by the mayor, was adopted, February 9, but the mayor has not yet made his nomination.

Personal.—The notice in THE JOURNAL of February 27, that Dr. Sydney D. Porter, New Orleans, had been made secretary of the State Board of Health was incorrect. At a recent meeting of the board, Dr. Porter was made medical inspector, and since that time he has resigned to enter private practice.——Asst. Surgs. Julian M. Gillespie and Charles L. Williams, U. S. P. H. S., were seriously injured in a collision between their automobile and a street car in New Orleans, February 17.

MARYLAND

Personal.—Dr. Samuel C. Chew, one of the oldest and best known physicians of Baltimore, is ill at his home, Roland Park. He has been gradually failing for a year, his impaired health being due to the infirmities of age.——Dr. William H. Welch, Baltimore, has been appointed a member of the China Medical Board of the Rockefeller Foundation, the object of which is to raise the standards of medical education in China.

Night Clinics Planned.—The problem that confronts Baltimore working men and women who need hospital and medical treatment, but who can neither afford to pay for it, nor take time from their work to attend free clinics during the day, will likely be solved if the plans of Dr. Flora Pollack of

the staff of the Johns Hopkins Medical School are carried out. Dr. Pollack has already arranged for the establishment of a community and recreation center in Highlandtown and for night clinics and a dispensary at that place. By the early summer it is hoped to have the clinic firmly established. Up to four years ago, Baltimore had free night clinics, but later they were discontinued. There are already twenty-four free day clinics and dispensaries, but they are comparatively useless so far as benefit to the working classes is concerned. It is Dr. Pollack's idea to have night clinics in all hospitals that receive state aid, but it is not her plan to establish night clinics in hospitals like the Johns Hopkins, as it would demoralize the highly organized systems of those places.

MASSACHUSETTS

In Health Department Service More than Half a Century.—Morris Benjamin Rowe, who had been in the service of the Boston Health Department for fifty-six years under twenty-eight different administrations, died at his home in Roxbury, Boston, March 1, aged 82.

Personal.—Dr. Allen J. McLaughlin, state commissioner of health, has been asked by the American Red Cross and the Rockefeller Foundation, to go to Servia to take charge of the campaign against typhus fever and cholera.——Dr. and Mrs. L. I. Chandler Walker, Boston, have sailed for Europe where they have volunteered for service at a new hospital to be established at Chateau Passy near Sens, France.

Health Commissioner Answers Criticism.—State Health Commissioner Allen J. McLaughlin, who has been criticized for failing to appoint three members of the department in the appointment of eight district health officers, has sent a statement to the governor in which he explains that there were ten candidates from old positions in the competitive examination to fill eight places, and each was given the maximum number of points for experience. The single applicant appointed outside of the persons in office, although he possessed the degree of Doctor of Public Health and had had a great deal of experience in public health work, was given only 75 per cent. of the points for experience. With these he finished third on the general average with a percentage of 11.4 higher than the old inspectors who were eliminated.

MINNESOTA

Personal.—Dr. Frank F. Wesbrook, formerly dean of the School of Medicine of the University of Minnesota, and now president of the University of British Columbia, has been commissioned as lieutenant in the Canadian Army Medical Corps, and is preparing for service abroad.——Dr. Pearl M. Hall, Minneapolis, is reported to be seriously ill with septicemia due to an infected finger.——Dr. Jacob H. Stewart, St. Paul, is reported to be seriously ill with neuritis in the city hospital.

Hospital News.—The Physicians' Hospital Company has been organized at Thief River Falls, with a capital stock of $25,000. The object of the corporation is to construct, equip and maintain a hospital, and the officers of the association are: Dr. Jesse E. Douglass, Thief River Falls, president; Dr. Oscar F. Melby, Thief River Falls, vice-president; Dr. Herman W. Froehlich, Crosby, secretary; and Dr. Francis H. Gambell, Thief River Falls, treasurer; and Dr. Harvey G. Hieber, Thief River Falls, director.——A new hospital, 40x66 feet, with accommodations for fifteen patients, was recently opened at Braham.——The United Churches Hospital Association of Minneapolis has secured a permit for the erection of the Fairview Hospital at Twenty-Third Avenue and Sixth Street South, to cost $75,000, and to be completed by August 1. The building will be of tile, brick and concrete construction and four stories in height.——Plans are being prepared for improvements at St. Luke's Hospital, St. Paul, which include a five-story addition to the ward building to cost $80,000 and a chapel to cost about $30,000.

Detecting Infectious Diseases.—Under a plan of recent adoption by the health board of Minnesota of supervision of epidemics by quiet investigation, about 48,000 cases of infectious disease were discovered in 1913 and 1914, as against 16,000 in 1911 and 1912. About 300 investigations were made in 1914, involving 45,000 miles of travel. The number of cases found probably did not exceed the number existing during previous years, but the investigations disclosed them, and by this means their spread was prevented. This work cost the state $17,000 in 1914, but undoubtedly saved the citizens many more thousands in the way of prevention. Of the investigations made, sixty-six related to tuberculosis, seventy to typhoid fever and 157 to diphtheria, scarlet fever, smallpox and other infectious diseases. The board has evolved a successful plan of controlling epidemics in the schools without closing them, which constitutes an important economic advance.——At present sixteen sanatoriums have been established or are under construction for the care and treatment of persons with tuberculosis. They are distributed among twenty-nine different counties. Those for St. Louis, Ottertail and Ramsey counties are now treating patients.

NEW JERSEY

Personal.—Dr. James M. Reese, Phillipsburg, has been elected president and Dr. Floyd A. Shimer, Phillipsburg, first vice-president, of the Tuberculosis Society of Phillipsburg.——Dr. Joseph Bellas, Montclair, is ill with diphtheria in the Essex County Isolation Hospital.——Dr. William S. Disbrow has been elected president of the Newark Board of Health.

Memorial to Francis.—A fund of $1,000 is being raised in Montclair to establish a memorial to the late Dr. Richard Pierce Francis, formerly chief of the staff of the Mountainside Hospital, who was killed two years ago in an automobile accident. The fund is to be used to equip the men's ward of the new hospital building, and it is also proposed that the ward shall bear the name of Dr. Francis.

NEW YORK

Conference and Exhibit on Mental Hygiene.—The first state conference and exhibit on mental hygiene will be held in Albany on March 23, 24 and 25, under the auspices of the mental hygiene committee of the State Charities' Aid Association.

Personal.—Dr. Robert J. Talbot, Niagara Falls, fractured his right arm while cranking his automobile, March 6.——Dr. John P. Faber was reelected president of the Schenectady Committee on the Prevention of Tuberculosis of the State Charities' Aid Association at its meeting, March 5.

Hoof and Mouth Disease in Westchester.—Westchester County has been placed under quarantine because of an outbreak of the hoof and mouth disease among a number of herds of cattle. On March 11, 146 cattle were shot and it was stated that 400 would be destroyed the following day. The herds of Westchester County are mostly on the estates of very wealthy men and have among them some of the most valuable cattle in this country. The orders have gone out that cats, dogs, pigeons and birds shall also be destroyed in the infected area. Employees have been put under quarantine until the infected cattle shall have been destroyed.

New York City

Personal.—Dr. Israel L. Feinberg, president of the Manhattan Board of Coroners, is ill with pneumonia at his home.——Dr. Cecil MacCoy, Brooklyn, after fifteen years of active service, as visiting physician at the King's County Hospital, has resigned.

Postgraduate Course in Infectious Diseases.—Through the cooperation of the medical board of the Willard Parker Hospital, the bureau of hospitals and the bureau of laboratories with the department of health, a course of clinical lectures and demonstrations in the contagious and infectious diseases has been inaugurated for the benefit of practicing physicians. There are no fees. The first course began March 2. Applications from graduates of numerous colleges in this country and abroad have already been received. A schedule of the courses is printed in the *Weekly Bulletin* of the Department of Health, March 6, 1915.

Legal Decision Upholds Health Department.—Justice Lehman of the supreme court has just rendered an important legal decision upholding the right of the department of health of this city to enact and enforce an ordinance providing for the muzzling of all dogs in the streets and other public places of this city. The department of health holds that the muzzling of dogs is only a part of the campaign against rabies. It is equally important that stray cats and dogs should be destroyed. During the year 1914 the Society for the Prevention of Cruelty to Animals destroyed 18,510 dogs and 49,940 cats. The Bulletin of the health department shows that there has been a falling off in the number of dog bites and also a decrease in the number of cases of rabies in this city during the past six months.

Blood Tests in Public Schools.—As a part of the Gary system of education which is being tried in two of the public schools of the Flatbush district of Brooklyn, tests of the

pupils' blood are being made as a means of determining whether the pupils are well nourished. The local newspapers have charged that parents objected to this but Dr. C. Ward G. Crampton, director of physical training in the public schools, denies these reports and states that no blood tests are made without the permission of the parents and that there has been no complaint whatever. In these schools the experiment is being tried of dividing the pupils into two sections, one being sent to the play grounds while the other is in the class rooms. It is stated that the pupils advance more rapidly by this system than when they spend a longer time in the classroom.

Overcrowded Cars as a Health Menace.—Mayor Mitchell recently addressed a communication to Commissioner of Health Goldwater concerning the authority of the department to demand less overcrowding of cars on the ground that such overcrowding is a menace to the health of passengers and a nuisance which should be abated. The mayor cites as authority Section 1176 of the city charter which provides that "Whenever any business pursuit shall, in the opinion of the Board of Health, be in a condition or in effect dangerous to life or health, said board may enter in its records the same as a nuisance, and order the same to be removed, abated, suspended or improved." The mayor says that the health department has shown that overcrowding is a menace to health, and on proper representation of this fact he believes the courts would sustain the contention. It was therefore ordered that the surface lines so regulate the number of cars employed that the number of passengers on any car at any time shall not exceed one and one-half times the seating capacity of the car.

NORTH CAROLINA

Work Started on Mission Hospital.—Work has been started on the addition to the Mission Hospital, Asheville, which is to be erected at a cost of about $50,000; will accommodate thirty-three patients and will be ready for occupancy in August.

Personal.—The work of Dr. J. Howell Way, Waynesville, president of the State Board of Health, was given an extended notice in the New York *Tribune* of February 28. The thoroughness and effectiveness of the work of the board received especial praise in the article.——Dr. Paul B. Means, Concord, has been appointed assistant physician in the New Jersey State Hospital for Nervous Diseases, Skillman.

Gubernatorial Appointments.—The governor of North Carolina has appointed the following physicians as trustees: State Hospital Insane, Raleigh, Dr. Thomas W. M. Long, Roanoke Rapids; State Hospital Insane, Morgantown, Dr. Lucius N. Glenn, Gastonia; State Hospital Insane, Goldsboro, Dr. J. G. Anderson, Greene County, and Dr. John T. Hoggard, Atkinson, and State Normal College for Women, Greensboro, Dr. Thomas S. McMullan, Hertford.

Clinical Congrees Meets.—The Seventh District Clinical Congress, a subdivision of the work of the Seventh District Medical Society, which was organized five years ago by the then councilor of the district, Dr. A. J. Crowell, Charlotte, was held in Charlotte, March 8 and 9, with a goodly attendance of visitors present. Medical and surgical clinics were given at the Charlotte Sanitarium, St. Peter's Hospital, The Mercy General Hospital, and at the Presbyterian Hospital. The occasion brought together a number of the best clinical workers of the district and the time was most profitably spent.

PENNSYLVANIA

Freak Legislation Regarding Vaccination.—It is reported from Harrisburg that Representative Horace W. Cromer of Allegany, March 9 introduced a bill into the state legislature seeking to prohibit vaccination for small-pox and fixing a fine of $500 or imprisonment for six months as the penalty.

Personal.—Dr. Walter Lathrop of the State Hospital, Hazleton, was operated on in a hospital in New York City, recently.——Dr. J. Thomas Quincy, Norristown, is said to have been the victim of a swindle amounting to $50 at the hands of a magazine agent who presented a check drawn to the order of Thomas J. Armstrong and certified by the West Jersey National Bank. This check the agent induced Dr. Quincy to indorse.——Dr. Elliott E. Phillips, Gouldsboro, is ill at his home with typhoid fever.——Dr. Francis H. Brobst, Reading, is reported to be seriously ill with septicemia.——Dr. Edwin R. Van der Slice, Mount Alto, has been appointed superintendent of the Hospital for Tuberculosis of the state of Nebraska, Carney.——Dr. Samuel C. Jaspan has resigned from the staff of the State Sanatorium and has located in Trenton, N. J.——Dr. Nellie De Hay-Hunan, Blue Ridge Summit, is in India but expects soon to return home.——Dr. Alexander L. Gillars, Pottsville, was seriously injured March 3, by a fall while getting over a stile.——Dr. Walter McNeal, Nanticoke, was operated on for appendicitis at the Nanticoke State Hospital, March 3, and is reported to be doing well.

Philadelphia

New Scholarships to Thirteen.—During the present session, thirteen students of the Woman's Medical College of Pennsylvania, Philadelphia, were granted scholarships ranging in value from $100 to full tuition, $175. Next year it is reported, an additional sum of $6,500 will be available for this purpose.

Drug Users at Byberry.—By opening one of the new buildings at Byberry, March 8, Dr. Ziegler, director of the Department of Health and Charity, provided more room for the treatment of drug users. Twenty-five patients at the Philadelphia Hospital were removed to Byberry. Until the transfer was made there were ninety-one such cases at the Philadelphia Hospital. Of this number twenty-six are women.

SOUTH CAROLINA

State Health Board Appointments.—The governor has made the following appointments: state health officer, Dr. James A. Hayne, Columbia; members of the executive committee, Drs. Robert Wilson, Jr., Charleston; David B. Frontis, Ridge Spring; Claude C. Gambrill, Abbeville; William J. Burdell, Lugoff; Edgar A. Hines, Seneca; William M. Lester, Columbia; William Egleston, Hartsville, and William W. Dodson, Ph.G., Greenville.

Superintendent to be Named.—At the annual meeting of the executive committee of the State Board of Health of South Carolina, to be held at Greenwood, April 20, there will be an election for the position of medical superintendent of the State Tuberculosis Hospital, to be opened at State Park, near Columbia. Salary, $1,500 per annum, fuel, lights and board. A married man preferred. Applicants must state age, previous experience, college and year of graduation and such other facts as they deem pertinent. Applications should be addressed to James A. Hayne, Secretary, State Board of Health, Columbia, S. C.

WISCONSIN

Sanatorium Notes.—The State Board of Control has sanctioned the plans for a new Kenosha tuberculosis sanatorium, and bids will be asked for early next month.——Winnebago County has recently completed its tuberculosis sanatorium.

CANADA

Health Official Dies.—Edward W. Hilton, for eighteen years a member of the health office staff of Toronto and chief of the municipal disinfecting department, died in the Toronto General Hospital, March 6, from malignant disease, aged 50.

Tuberculosis Clinic at St. Johns.—Dr. David Townsend, superintendent of the Jordan Memorial Sanatorium, River Glade, N. B., conducted a tuberculosis clinic at St. Johns, N. B., March 4, and will hereafter visit St. Johns for this purpose on the first Thursday of every month. The sanatorium has at present twenty-five patients, its capacity being thirty.

Cerebrospinal Meningitis in Toronto.—The small outbreak of cerebrospinal meningitis among some 4,500 men in camp in Toronto who will form part of the Second Canadian Overseas Force, is now said to be well in hand. It is supposed to have originated among the mess orderlies, and a recent examination of some 150 of these for meningitis germs gave negative results in all cases. Some fifty-seven soldiers who are said to be carriers have been isolated in the old Toronto General Hospital. There have been two or three deaths from about a dozen cases.

University Volunteers.—Arrangements have been made by the Canadian Militia Department for hospital corps to go with the second and third Canadian contingents from the universities of Toronto, McGill, Queen's and Laval. Among the Toronto men who have volunteered are Drs. Irving H. Cameron, George A. Bingham, Alexander Primrose, Frederick N. G. Starr, P. Walter H. McKeown, William J. O. Malloch, Clarence L. Starr, Graham Chambers, Harry B.

Anderson, Robert J. Dwyer, E. Stanley Ryerson, John A. McCollum and Herbert A. Bruce.

Hospital News.—The large house, known as Valleyview Villa, St. Thomas, Ont., which was recently purchased by the Catholics of that city for hospital purposes, was destroyed by fire, March 11.——Orders have been received in Montreal for the immediate mobilization of the French-Canadian Stationary Hospital, for overseas service, under command of Lieut.-Col. A. E. Mignault, M.D.——Hospital abuse is said to be rampant in connection with the new Toronto General Hospital. Superintendent Clarke and the drivers of the ambulances state that the city gives orders for free treatment to many patients who are well able to pay for their maintenance.

GENERAL

Examination of Oyster Beds.—The steamer *W. D. Bratton* of the U. S. P. H. Service is on duty in connection with the sanitary examination of oyster beds and oyster-bearing water in the Chesapeake Bay and tributaries.

Safety First Federation.—The Safety First Federation of America was organized in New York, February 25, eighteen states being represented. The work of the federation is the coordination of the work of many public safety bodies into a strong national organization through which local activities may be expedited and extended.

Model Hospital Displayed.—Among the interesting exhibits of the Panama-Pacific Exposition, San Francisco, is a thoroughly equipped emergency hospital conducted as a working exhibit by the United States Public Health Service. Surgeon Rell M. Woodward is in charge with two service assistants and two civilian physicians and in addition there are six nurses on duty.

Diphtheria Aid for Mexico.—The American National Red Cross in response to appeals for medical assistance received from Dr. Herbert E. Stevenson, chairman of the El Paso chapter has forwarded by express from St. Louis and New Orleans, 2,000,000 units of diphtheria antitoxin to be used in the vicinity of Neoqui, Chihuahua, where there are reported to be 300 cases of diphtheria.

Subscription Swindlers at Work in Pennsylvania.—Notice has come to The Journal that one or more subscription swindlers are working in Pennsylvania and Ohio, claiming to represent The Journal of the American Medical Association, and collecting money for subscriptions. Readers are warned not to pay money to any solicitor without first assuring themselves that he is properly authorized. See Advertising Page 20, under "Warning."

Anesthetists to Meet.—The Interstate Association of Anesthetists will hold its meeting for organization in conjunction with that of the Ohio State Medical Association, Cincinnati, May 4 and 5, with headquarters at the Hotel Gibson. An informal organization dinner is to be served on the first evening followed by a smoker provided by the local entertainment committee of the Cincinnati Academy of Medicine. An attractive program has been prepared and anesthetists are invited to attend. Dr. F. Hoeffer McMechan, 1044 Wesley Avenue, Cincinnati, is secretary of the association.

Bequests and Donations.—The following bequests and donations have recently been announced:

Boston Floating Hospital, $10,000; Vincent Memorial Hospital, Boston, one-quarter of the residue of the estate after the payment of bequests, by the will of William H. Story, South Boston.

Howard Hospital, Philadelphia, $25,000 by the will of Edward Smith Kelly.

St. Timothy's and Episcopal hospitals, Philadelphia, $1,000 each by the will of Dr. John L. Brumley.

University Hospital and Philadelphia Home for Incurables, equal parts of a contingent bequest of the estate of the late Mary Rushton, valued at $135,000.

Bogus Index Association Operating Among Physicians.—Attention has been called in previous issues of The Journal to a concern with the high sounding name, The American Bureau of Medical Research, with headquarters at Indianapolis, which was attempting to solicit subscriptions from physicians at $5 each, for which sum it promised to send a reprint of any article published in medical literature. A similar plan on a much larger scale has recently operated in New Orleans. This was entitled the American Medical Index Association. Its activities extended over Texas, Alabama and Ohio, the chief of the concern signing himself Dr. C. A. Beck. Dr. Rudolph Matas informs us by telegram that this individual was last heard of at Youngsville, Ohio, where he forged a check, signing the name of Dr. Matas. The American Medical Index Association rented rooms in a large office building in New Orleans, these were elaborately furnished, and a number of solicitors were put to work canvassing physicians. These solicitors used the name of Dr. Matas as endorsement. On February 27 it was reported that the concern had abandoned its office, removing everything from it and leaving a number of solicitors—mostly girls—in the lurch, owing them salaries for their work. This American Medical Index Association solicited contracts at $10 a year, for which it promised to give members a monthly index, from which to order reprints, with no additional charges for sending the reprints except 10 cents postage. The number of journals from which it was claimed the index was composed included practically every scientific journal in the United States. Here again is an obviously impossible scheme, and yet numerous physicians are said to have subscribed. Physicians are warned once more not to pay money to any solicitor for any purpose whatever, unless he can present proper credentials. In all cases make checks payable to the firm and not to the individual solicitor.

FOREIGN

Foot and Mouth Disease in Sweden.—Private correspondence from Sweden, according to the Bertrand (Neb.) *Herald*, indicates that foot and mouth disease is prevalent in sections of that country to a serious extent and is crippling the dairy industry. Herds numbering 200 have been killed and on farms where infection is found every domestic animal except the horses are ordered killed.

Honors for Cortezo of Spain.—Carlos M. Cortezo, one of the four members of the editorial staff of the *Siglo Medico* of Madrid, senator, and member of the royal cabinet, was recently elected president of the Academia de Medicina and at the same time of the Union Medica Nacional. He was instrumental in the recent passage of a law pensioning physicians incapacitated by their work during epidemics and their dependents. He also aided in the organization of the national board of public health and was its first president. A banquet was tendered him the day he assumed the president's chair at the Academy of Medicine, a day which also inaugurated the new building of the academy—another achievement credited mainly to him. The *Siglo Medico* describes the event merely by quoting the long accounts published in the daily papers of Madrid and elsewhere. Over 6,000 persons or corporations, medical and otherwise throughout the country sent in a word or letter of greeting to join the "Homenaje al Doctor Cortezo." In the following *Siglo Medico* he published a letter "To the Physicians of Spain" in which he said that the remarkable tribute just rendered to him by the state, the public and scientific organizations was not meant for him personally but was a tribute to the medical profession as a whole which he happened, at the moment, to represent. "It was merely," he adds, "a pretext for honoring the medical men throughout the country, a pretext for the public to express its appreciation of what the medical profession is and what it signifies in modern society. Thus I explain what you call my Homenaje; it was placed in my hands only to hand it over to the physicians of Spain."

WAR NOTES

Funds for War Relief.—The Cheyenne (Wyo.) Chapter of the American Red Cross, one of the newest chapters, has raised for European war relief, $4,507.24 by the sale of Red Cross flags.

New Hospital.—A special hospital for wounded soldiers whose cases require delicate surgical operations has been opened at Compiègne, France, under the direction of Dr. Alexis Carrel of New York City.

Personal.—Dr. Charles S. Pancoast, Camden, N. J., on duty with the Austrian Red Cross, has reached his post of duty in Budapest.——Dr. Norman V. Leslie, Hamilton, Ont., on duty with the expeditionary force in France, is reported to be ill with diphtheria.

Red Cross Units for Belgium.—As the result of correspondence between the American Red Cross and Dr. DePage, surgeon in chief of the Belgian Red Cross, the American Red Cross has decided to send two fully equipped hospital units, each consisting of three surgeons and twelve nurses, for work with the Belgian army.

Physicians Go to War.—It is reported that fourteen medical men have entered the British service from Manitoba alone, and that seven of these are already on duty with the expeditionary force in France.——Sixteen members of the fourth-year medical class of the University of Toronto, who have volunteered to join the clearing hospital of the second contingent, were given a banquet, March 5.

Harvard Unit Starts for Paris.—On March 17 the Harvard unit for service in the American Ambulance Hospital, Paris, sailed for Europe, via the Mediterranean. This unit is in charge of Dr. Harvey Cushing, as head surgeon, and Dr. Robert B. Greenough, as executive officer. The other members of the party are Drs. Richard P. Strong, Robert B. Osgood, Beth Vincent, Walter M. Boothby, Frederick A. Coller, Elliott C. Cutler, Philip D. Wilson, Marius N. Smith-Peterson, Lyman G. Barton, Jr., Orville F. Rogers, Jr., George Benet, together with four operating-room nurses. This unit will relieve the medical men and nurses from the Western Reserve Medical School, Cleveland, whose assignment ends March 31.

Aid for Belgian Physicians.—The work of the American committee has been such that practically every Belgian civilian has received some share of the food supplies being distributed. The report of the treasurer for the week ending March 13, 1915, lists the following contributions:

Dr. Frank Slopensky, Helper, Utah	$ 5.00
McKees Rocks Medical Society, McKees Rocks, Pa.	6.50
Dr. James Anders, Philadelphia, Pa.	15.00
Dr. Charles M. Green, Boston, Mass.	25.00
Dr. J. M. Miller, Hickory, Pa.	5.00
Dr. John Woodman, New York, N. Y.	10.00
Dr. R. L. Bradley, Roswell, New Mexico	5.00
Dr. Everett D. Peak, Thompson Falls, Mont.	25.00
Dr. Charles L. Minor, Asheville, N. C.	15.00
J. M. H., Ft. Logan H. Roots, Ark.	5.00
Dr. Fred E. Thompson, Detroit, Mich.	25.00
Dr. Alfred H. Tickell, Nevada City, Cal.	2.00
Dr. Z. H. McClanahan, Colorado Springs, Colo.	5.00
Dr. C. Dunbar Roy, Atlanta, Ga.	5.00
Hempstead Academy of Medicine, Portsmouth, Ohio	10.00
Dr. Halsey Beach Loder, Boston, Mass.	5.00
Dr. and Mrs. James R. Judd, Honolulu, Hawaii	25.00
Dr. Hugh T. Patrick, Chicago, Ill.	25.00
Receipts for week ending March 13	$ 218.50
Previously reported receipts	4,611.50
Total receipts	$ 4,830.00
Previously reported disbursements	$4,614.60
Disbursements week ending March 13, 90 boxes at $2.30	207.00
Total disbursements	$4,821.60 4,830.00
Balance	$8.40

F. F. SIMPSON, M.D., Treasurer.
5 Jenkins Arcade Bldg., Pittsburgh, Pa.

Red Cross Needs.—The American Red Cross announces that there is special need of sheets and pillow cases and towels for use in the hospitals in Europe. These supplies should be addressed to the American Red Cross, Bush Terminal Number 19, Brooklyn, with boxes marked distinctly as to contents.——The American Red Cross has shipped by the transatlantic steamer *Chicago* from New York, 354 boxes, cases and bales of hospital supplies, including 22,000 pounds of absorbent cotton, 1,000 pounds of chloroform and several thousand pounds of bandages and yards of gauze and several barrels of iodin. This consignment is being sent to Paris.——By the Atlantic Transport Line steamer *Samland*, which sailed from New York, March 7, 97 large boxes of medical and surgical supplies for the British Red Cross were transported, consigned to Sir William Garstin, chief of the stores department of the organization.——The American Red Cross has sent 212 packages of hospital supplies by the Scandinavian-American steamer *California* for the use of the German Red Cross, addressed in care of the United States Consul at Copenhagen. By the same vessel, 63 packages of hospital supplies are being taken to the Red Cross Hospital in Munich.——By the steamer *Georgias* of the Hellenic Transportation Company, the American Red Cross has transported 206 boxes of supplies to the Servian Red Cross at Nish, Servia, and 105 cases of hospital supplies and clothing to Dr. Ethan Flagg Butler, surgical director of the American Red Cross work at Gevgalia, Servia.

BERLIN LETTER

BERLIN, Feb. 16, 1915.

Personal

A victim of the war, Professor Neuhauss of Berlin died at his home at the age of 59. Neuhauss, noted for his numerous journeys for anthropologic investigation and study and his successful work in the field of color photography, undertook, a few weeks ago, the conduct of a diphtheria barracks in the hospital at Lichterfeld and there became infected. He succumbed after a few days to diphtheria. Soon after he was licensed as physician, he made a journey around the world. Later he was, for a time, assistant at the Bethany Hospital in this city. Then the wanderlust seized him again, and he made a voyage to the South Sea, and six years ago another one to German New Guinea. The latter, in which he discovered the pygmies, he has described in a large three-volume work. He was one of the first to produce colored photographs. His later studies in the field of anthropology concerned the genuineness of the alleged Schiller's skull found by the Tübingen anatomist, von Froriep, at Weimar, which he discredited in favor of the skull which was placed in the princely tomb.

February 10, the senior of the faculty of Kiel, the well-known physiologist, Professor Hansen, celebrated his eightieth birthday.

The War

THE NUTRITION QUESTION

The control of the distribution of bread and flour has been carried out in Berlin by the distribution of bread checks. Each family receives a card corresponding to the number of members, which contains directions for small quantities of flour and rolls and bread of definite weight. The individual rations are furnished by the separation of coupons which indicate the respective quantities. The removal of the corresponding coupon is always made by the baker or flour dealer. The family receive a supply only so long as their card contains coupons, and, on the other hand, the bakers and flour dealers receive from the authorities only so much flour or bakery goods as corresponds to the sum of the coupons presented by them. In details, this arrangement naturally presents difficulties in carrying it out, in spite of the special directions which are provided for hotels, boarding houses, restaurants and hospitals, but in consequence of the adaptability of our people, and particularly in view of their good disposition to persevere under all circumstances, this measure will probably succeed. From the standpoint of nutrition, those whom we have to care for are received, naturally, with very little satisfaction. In the German prisoners' camps there were, at the end of December, 310,000 Russian prisoners, and since that time the number has increased at least 70,000. There were at the end of December, 220,000 French prisoners, 38,000 Belgians, 20,000 British, white and colored. We will naturally fulfil the duty of humanity, and, in spite of the limitation of our food by England, will nourish our captured enemies as well as possible.

MILITARY STATISTICS OF THE WAR

The Prussian general staff has presented calculations for the last Russo-Japanese war and the Franco-Prussian war. The statistics of losses are as follows:

In 1870-1871 there were eighteen great battles, with forty days of battle and five engagements of the larger class and 228 of a smaller. In 1904-1905 there were four great battles, with twenty-seven days of battle and six larger and thirty-seven smaller engagements. If we calculate first the losses in battle of those killed and wounded, there was, on the side of the Russians, a total loss of 135,000 and on that of the Japanese 146,000; in the case of the Germans, 82,500. Reckoned on the basis of the total numbers engaged, there was an average loss per individual battle, according to Schwiening, for the Russians, 16.7 per cent.; for the Japanese, 20.4; for the Germans, 7. The individual day of battle demanded, in the Russo-Japanese war, a proportionately very much smaller sacrifice than in the years 1870-1871, but the losses in Manchuria were very disproportionately distributed according to the individual days of battle. According to this, the general staff believes that it is justified in supposing that the battles of the eastern Asiatic war were more bloody than those of the war of 1870-1871, not only in consequence of the long continuance of the battle, but also as a result of the improved action of weapons, which is also the occasion for the great duration of modern battles. The proportion of those who died of diseases and wounds to the number of those treated for diseases and wounds is of interest. In the Crimean war, for instance, 12.2 per cent. of all the sick among the English died; among the French, 16.4 per cent. In the Franco-Prussian war the proportion was only 3.1. In the Manchurian war among the Russians, the figure was only 2.1, but among the Japanese it was 8.1. With reference to the percentage relation of those who died from wounds in the course of the decade, a marked improvement is to be noted. For instance: of 100 wounded in the Crimean war, 24.9 died; in the Italian war, 17.3 per cent. died; in the war of 1864, among the Prussians, 15.5; in the campaign of 1870-1871, among the Germans, 11.1; in the Spanish-American War, 7.6; finally in the last war among the Japanese, 6.8; among the Russians, 3.2. This is a striking evidence of the progress in military surgery in war.

PARIS LETTER

Paris, Feb. 25, 1915.

The War

ORGANIZATION OF CENTERS FOR SPECIALIST TREATMENT FOR WOUNDED SOLDIERS

Since the beginning of the war the direction of the war department health service has been making an effort to utilize abilities to the best advantage, and has organized in each of the military regions (France is divided into twenty-one military regions, not including the military government of Paris) special services of neurology (traumatic lesions of the nervous system), physiotherapy, ophthalmology, oto-rhinolaryngology, orthopedics, psychiatry and maxillary-facial prothesis. For each specialty in each region a central service has been established and secondary services placed in various cities selected so that the soldiers can easily be taken there. At the head of each of these services has been placed a regional head of the service who has a threefold duty: (1) to treat the patients placed in the central service; (2) to visit on tours of inspection the various hospitals of the region and to select the patients suitable for treatment in the central or secondary services; (3) to collect scientific and practical data which come to light during the working of the various special centers of the region. Every month he is to sum up the data which seem to him the most interesting and, adding the results of his personal practice, to communicate them on the one hand to the administration of the war department health service and on the other, to the heads of the organizations of the same specialty in the other regions.

It is particularly recommended that the physicians of the various sanitary formations shall, as promptly as possible, send to the large centers where these medicosurgical specialties are established all the wounded patients who are suitable for special treatment.

THE WAR AND THE PROTECTION OF CHILDREN

During a conference held at the Musée Social, Dr. Pinard, former professor of clinical obstetrics at the Faculté de médecine de Paris, explained in detail the measures taken throughout the extent of the military government of Paris since the outbreak of war to protect pregnant women and young children. At the beginning of the mobilization delegates were sent to the *mairies* and the maternity hospitals. There every pregnant woman was interrogated. Food, lodging and medical attention were assured to her. Every woman, after her lying in, was enabled to finish her convalescence under the best conditions whether in suburban establishments of the Assistance publique, or in private institutions. Six hundred and fifty beds were put at the disposition of the central office of maternal assistance.

Measures were taken, moreover, to assure the milk supply of Paris (The Journal, Jan. 23, 1915, p. 356). All allied organizations lent their aid: the Abri Maternel, the Cantines Maternelles, the Charité Maternelle and the Assistance Publique.

The results of these efforts were excellent. During the last five months of 1914 there were in Paris 16,579 births, of which 12,203 took place in maternity hospitals. The maternal mortality was about 20 per cent. less than that of the same period in 1913 and the infant mortality was 30 per cent. less. The number of infants abandoned by their mothers was less by about half. It may also be said that the infants of 1914 are superior to those of previous years. Their weight, which averages 15 per cent. higher than that of the infants of previous years, proves this incontestably. Results such as these, obtained during a period of distress and trouble, show what can be done in the future during peace and ordinary industry for the future of the race.

The Defects of Ventilating Fans

It is well known that the use of ventilating fans in dwelling houses, shops, theaters, cafés, restaurants, etc., is subject to numerous inconveniences and great dangers. In the course of a paper read before the Société de biologie about five years ago which was much commented on at the time, Dr. Sartory, professor at the Ecole de pharmacie de Nancy, and Dr. Filassier, head of the Bureau of Statistics of the city of Paris, showed that ventilating fans ought to be considered as "diffusers par excellence of tuberculosis and influenza." The experiments which they carried out proved that, especially in cafés and restaurants, pathogenic germs stirred up about the feet of customers and employees were drawn up in the air to the height of the mouth and nose and absorbed in large numbers, first by the respiratory mechanism and in the second place along with food and drinks.

The Pasteur Institute has taken up the study of this question. One of the heads of service there, M. Trillat, has made long and minute experiments under the control of Professor Laveran, assistant director of the Pasteur Institute, which show that while the "dry dust" of dwellings has been with justice believed to be capable of conveying the tubercle bacillus "moist dust" is without doubt a vehicle for the most contagious germs such as those of scarlet fever, smallpox, influenza and varicella. Trillat has studied the effects of ventilating fans on microbian droplets within closed places such as sick rooms, hospital rooms, theaters, etc. He has ascertained that under the influence of the gyrating current of air in badly ventilated rooms, there are produced little whirlwinds which constitute zones where the microbes of the diseases most transmissible by air become amassed.

A New Treatment for Articular Effusion

At one of the last sessions of the Académie des sciences Dr. Raoul Bayeux of Paris reported a new method of treating hydrarthrosis and hemarthrosis of the knee. First, an evacuating puncture is made with a trocar, then oxygen under pressure of 70 cm. of water is aseptically injected into the joint. These injections are repeated every two or three days and five or six injections of the gas are generally sufficient to produce perfect cure.

LONDON LETTER

London, Feb. 26, 1915.

The War

A HOSPITAL FOR EMERGENCY CASES FOR THE FRENCH

Arrangements have been made in this country to supply the French with a hospital for emergency cases. The arrangements have received the approval of the Anglo-French Hospitals Committee, and the French military authorities have promised to provide a suitable building or buildings for sixty patients. The hospital will be placed about 50 miles behind the firing line and is especially designed for the treatment of urgent surgical cases among the French wounded between the firing line and the base hospitals. Promises have been received of five or six motor-cars and ambulances. The equipment will include provision for a complete theater; Roentgen-ray apparatus, with dynamo, which will also be used for electric lighting; beds and bedding for sixty patients; ward equipment; stores of dressings, anesthetics and drugs, and household stores. The staff will be entirely British and includes Mr. A. W. Mayo Robson, the well-known surgeon, who retired from practice a few years ago.

AN EMERGENCY SURGICAL SERVICE FOR AIR RAIDS

The possibility of further air raids has caused the members of the Royal Society of Medicine to organize, with the approval of the military and police authorities, a voluntary service of surgeons, assistants and anesthetists. On being called out, these are prepared to start for the east coast, or any part of the metropolitan area. The Royal Automobile Club has placed a fleet of cars at the disposal of the service, which will convey parties with their equipment free to any London district or, in case the railway should be blocked by military use, to the coast direct.

THE SHORTAGE OF MEDICAL OFFICERS OF INSTITUTIONS

The shortage of medical officers of institutions because of the great call of the profession from the army has been mentioned in previous letters. Its extent is illustrated by the fact that the secretary of the East London Hospital for Sick Children has made the following statement: "It is possible that there may be physicians who, if they knew of the difficulties under which hospitals are now laboring, would be willing to come into voluntary residence and help them during this temporary crisis. We have exhausted all the regular methods of obtaining resident physicians, and unless we can procure such help we shall be compelled to close a large part of the establishment, which at the present time would be a great calamity for the sick children."

SCHOOLS FOR MOTHERS

The losses of the war have increased the importance of the growing work done by the schools for mothers, both municipal and voluntary, and maternity centers. These institutions number about 500, and are being added to at the unprecedented rate of five or six a week. The establishment of medical inspection of schoolchildren in public elementary

schools drew attention to the existence of ailments and defects due to mothers' ignorance of simple rules of health. Instruction at the schools for mothers include home visiting and infant consultations. The provision of specific medical and surgical advice and treatment (if any) is incidental, whereas at baby clinics treatment is given and instruction is only incidental. The instruction at the schools is simple and practical, in the care and management of infants and young children, domestic and personal hygiene, home nursing, sewing and cookery.

THE CONSERVATION OF THE PRACTICES OF PHYSICIANS WHO HAVE JOINED THE ARMY

The means adopted to conserve the practices of physicians who have temporarily abandoned their work in order to help their country have been referred to in previous letters. The subject has received a good deal of attention from a committee of the British Medical Association. At first it was tentatively decided that physicians should do the work of their absent colleagues without payment. The committee now thinks that in many cases some departure may be made from this arrangement and expresses approval of the proposals made by the Scottish Medical Emergency Committee, which classifies practices as follows: (1) large towns, where an equal division of all remuneration, both from private and insurance practice, would be equitable; (2) towns with a considerable population, but with a large amount of country work, where a division on the basis of three eighths to the absentee and five eighths to the man doing all the work and paying all the expenses would be nearest to equity, and (3) small centers, or single practice areas where traveling expenses and consumption of time are still more important factors, and where a division on the basis of one quarter to the absentee and three quarters to the man doing the work might be proper.

Outbreak of Cerebrospinal Fever: A Ban on Kissing

A serious outbreak of cerebrospinal fever has occured in various parts of England and Wales, and the number of cases so far reported amounts to 100. At the Crystal Palace, London, which has now been converted into a naval training school, as many as eight deaths have occurred. The government has issued a notice to health officers that any suspicious cases shall be isolated immediately, and "contacts" must be watched. To prevent infection it is declared that any person even slightly suspected as having contracted the disease should refrain from kissing, as the germs in the first place attack the throat. The advisability of inquiring into the circumstances of deaths recorded as due to tuberculous meningitis, meningitis or convulsions in districts where cerebrospinal fever is known to be present is impressed on health officers.

The Metric System and the New Pharmacopeia

In this country the metric system of weights and measures is little used outside scientific laboratories and in certain manufactures where delicate adjustment is necessary. It is seldom used by the physician, although the compilers of the British Pharmacopeia began to introduce it sixteen years ago with the issue of their last edition. Instructions for mixing were given for the first time alternately in avoirdupois and the metric system. In the present edition of the British Pharmacopeia, which came into force at the beginning of the present year, avoirdupois is omitted and the wholesale druggist must in future use the metric system in the mixing of drugs. But the doses of drugs are given alternately in the metric system and in the old system of apothecaries' weights. Medical students will therefore in future learn their prescribing under the two systems, and in time, no doubt, the more scientific will prevail. The complete adoption of the metric system may, however, be a matter of some years. Physicians now practicing are not likely to abandon their present methods, and it will only be as students, trained to the newer method, leave the schools for practices of their own, that dispensing chemists will be compelled to adapt themselves to the change. Even so, it will probably not be altogether concurrent with the turning out of young doctors, since many of them make their start in life as assistants to or partners with established practitioners and although prepared to prescribe according to either method, will probably follow the practice of their employer or established partner. Probably the change will come first in institutions, such as hospitals, lunatic asylums, poor law infirmaries, etc., in which the methods of the schools stand more chance of adoption, but however gradually the change will come about.

Association News

THE SAN FRANCISCO SESSION

Additional Northern Routes

Last week the most northern available route for the return trip from San Francisco was outlined. Three additional lines, from Portland, Tacoma or Seattle, are as follows:

GREAT NORTHERN RAILWAY

This route affords access to the Glacier National Park. The trip may be made directly from Portland to Spokane, or following the route already outlined, it may be by way of Tacoma and Seattle, then to Everett and eastward over the main line of the Great Northern to Spokane. In the direct route from Portland to Spokane, the course of the Columbia is followed for some 200 miles and thence through the canyon of the Snake River, until finally Spokane is reached. When the trip is through Tacoma and Seattle, by the Cascade Mountain and Puget Sound route, the train passes through the great Cascade tunnel, a wonder of engineering enterprise, 3½ miles in length, through which trains are handled by electric locomotives. In the center of the apple-bearing region, surrounded by the Cabinet and Coeur d'Alene ranges, lies Spokane in the western part of Washington, at which point these two routes join. Then the tracks follow the Pend Oreille, pass through the Kootenai Canyon through gold fields and by saw-mill towns, through the Cabinet Mountains, the Purcell and Wolfe ranges, over the 105-mile horseshoe of the Kootenai, across the "Panhandle" of Idaho, through the Tobacco Plains and Flathead Valley, and finally along the southern border of Glacier National Park.

GLACIER NATIONAL PARK

The park may be entered from the west at Belton. From one to thirty days may be devoted to touring it. The trip may be either a "hiking tour," on horseback or by automobile, stage and launch service. The following tours and rates are announced: One-day tour, $8.25; three-day tour, $21; five-day tour, $31.25; seven-day tour, $47.

From Belton, the trip may be made by auto to Apgars, from there by launch through Lake McDonald to the Lewis Hotel where the route may be varied in accordance with the pleasure of the visitor. Sperry Camp, Gunsight Camp, Going-to-the-sun Camp, Granite Park Camp, Many Glacier Camp, Cutbank Camp and Two Medicine Camp are all centers at which stops may be made or from which trips may be taken. The eastern entrance to the park is at Glacier Park Station where there is a large hotel. On the eastern boundary of the park is the Blackfeet Indian Reservation.

From Glacier Park Station the Great Northern passes across the states of Montana and North Dakota, through the Lake Park region of Minnesota to St. Paul and Minneapolis. Or, a connection may be made at Shelby, Mont., with a line going southeast through Billings (from which point the traveler may turn westward again and tour the Yellowstone Park), across the northwest portion of Wyoming, touching South Dakota and pass through Nebraska to Omaha, or to Kansas City.

NORTHERN PACIFIC RAILWAY

The Northern Pacific Railway leads to the northern entrance of the Yellowstone National Park, a direct connection from Portland reaching the Northern Pacific at Pasco or Spokane, or the route may include Tacoma and Seattle. Starting from either of these cities on the western slope of the Cascade range, the road follows the Green River to Stampede Pass where a 2-mile tunnel pierces the mountain. Then the Yakima River is followed from its source to Pasco, where the Columbia River is crossed. After leaving Spokane the train follows the northern shore of Lake Pend Oreille and the Cabinet Mountains are seen to the north with the Coeur d'Alene Mountains to the south; by the new Montana National Bison Range, through the Coriacan defile, skirting the reservation of the Flathead Indians into the Bitter Root Valley, noted for its scenery and agricultural interests. Then the route is along Hellgate River, across the Home-

stake Pass. The main range of the Rocky Mountains is crossed at the Bozeman Tunnel, to Livingston where a branch line runs to Gardiner, the northern gateway of the Yellowstone National Park. Trunks may be stored at the railway station at Gardiner free of charge or arrangements may be made for having them hauled from Gardiner to the Mammoth Hot Springs.

The regular tour of the Yellowstone Park includes six days south of Livingston, the tourist being in the park proper for five and a half days. This time is necessary to gain a general idea of the various attractions of the park and provides a half day at Mammoth Hot Springs for visiting the wonderful terraces and boiling springs near the hotel, and almost an entire day is devoted to the Upper Geyser Basin. The six principal points visited by tourists are Mammoth Hot Springs, Norris, Lower and Upper Geyser Basins, Yellowstone Lake, the Grand Canyon and the Great or Lower Falls of the Yellowstone. This side trip from Livingston and return including rail transportation between Livingston and Gardiner and stage transportation in the park, together with hotel lodging and meals, is listed at $53.50. The hotel rates in the park are $5 and upward per day for additional time to the regular trip.

After leaving Livingston, the Northern Pacific goes through the Bad Lands, crossing the Missouri River at Bismarck, thence to St. Paul and Minneapolis. A connection may be made at Huntley for Lincoln from which point Omaha, Kansas City and St. Louis may be reached.

Chicago, Milwaukee and St. Paul

Leaving Seattle or Tacoma, this road goes through the picturesque forest-clad canyons of the Snoqualmie River to the summit of the Cascade range, which is pierced by the Snoqualmie tunnel. On the eastern slope of this range are the Keechelus and Kachess lakes. The road traverses the Kittitas Valley, one of the chief fruit districts of Washington, crosses the Columbia and passes through the Palouse grain country to Spokane. Leaving Spokane, the "Panhandle" of Idaho is crossed past mountain peaks, narrow gorges, lakes and rivers to Montana. After passing Lake Chatcolet the road runs along the banks of the St. Joe River and again enters the mountain region of the Bitter Root and other ranges of the main Rockies. Then, passing through the Missoula and Deer Lodge Valley, it arrives at Butte. Shortly after this the Continental Divide is passed through Pipestone Pass Tunnel. At Three Forks, the Gallatin, Jefferson and Madison rivers unite to form the Missouri. The ride through the Montana Canyon is one of the features of the trip. Passing through the Musselshell and Yellowstone valleys, interest is centered in irrigation, dry farming, fruit growing and grazing. Leaving Montana and skirting the Bad Lands of North Dakota, the road passes through the Standing Rock Indian Reservation and crosses the Missouri River at Mobridge, S. D., from there traversing the grain fields of North Dakota and Minnesota to Minneapolis and St. Paul. The route then turns southeast through the upper regions of the Mississippi Valley for 140 miles to LaCrosse, Wis., where the Mississippi is crossed. Then through the beautiful lake region and the "Dells" of Wisconsin to Milwaukee and Chicago.

Marriages

Oscar Dowling, M.D., Shreveport, La., to Mrs. Lula Tindall George, Monroe, La., at Monroe, La., March 16.

Wilford Hall Crutcher, M.D., Ingleside, Neb., to Miss Golda Van Dyke of Oklahoma City, at Kansas City, February 24.

Raymond Arthur Tearnan, M.D., Munising, Mich., to Miss Sara Hildegarde Hoesley of Chicago, February 27.

James Elijah Neely, M.D., Elmo, Mo., to Miss Bessie K. Williams of Plattsburg, Mo., March 1.

John C. Joiner, M.D., Honey Grove, Tex., to Miss Fallie Murrell of Gainesville, Tex., March 4.

Deaths

James F. Donnelly, M.D. University of Louisville, 1900; of Brooklyn; for several years surgeon on the Ward, Cunard and Hamburg-American lines and once chief health officer for the Haytian Republic; for three years a member of the staff of the health officer of the Port of New York; who went to Belgium with the first American National Red Cross unit and after his return to this country, returned to Europe in November, 1914, as director of one of the Servian units; died in Nish, Servia, February 24, from typhoid fever, aged 45.

Samuel Boyce Craton, M.D. Syracuse (N. Y.) University, 1890; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; instructor in ophthalmology in his Alma Mater; oculist and aurist to the House of Providence, Syracuse; assistant ophthalmologist to St. Joseph's Hospital and ophthalmologist to Syracuse Hospital for Women and Children and Syracuse Free Dispensary; died at his home in Syracuse, February 26, from pneumonia, aged 51.

Joseph Bascom Griswold, M.D. Rush Medical College, 1858; a Fellow of the American Medical Association; a veteran of the Civil War; and formerly state department commander of the G. A. R. of Michigan and formerly president of the Michigan State Medical Society and a member of the State Board of Registration in Medicine; chief surgeon of the Grand Rapids and Indiana Railroad; died at his home in Grand Rapids, Mich., March 9, aged 73.

Jones Cadwalader Abernathy, M.D. Tulane University, New Orleans, 1860; surgeon of the Second Alabama and Forty-Third Georgia Infantry, C. S. A., during the Civil War; a member of the Medical Association of the State of Alabama and once president of the Jefferson County (Ala.) Medical Society; one of the best-known practitioners of Alabama; died at his home in West End, Birmingham, Ala., February 27, from heart disease, aged 79.

Thomas Elliott, M.D. Jefferson Medical College, 1877; a Fellow of the American Medical Association; a member of the surgical staff of the C. H. Buhl Hospital, Sharon, Pa., and surgeon to the United States Steel Company's plants at Sharon and South Sharon, Pa.; founder of the Elliott Hospital, Sharon; died in that institution, February 28, from septicemia, due to an operation wound, aged 59.

Reginald A. D. King, M.D. McGill University, Montreal, 1868; president of the St. Francis' Medical Association; a veteran of the Civil War; chairman of the board of education of Waterville, Que.; a member of the executive committee of the Forestry Congress; for many years principal medical officer in the Canadian Army Medical Corps; died at his home in Waterville, Que., February 19, aged 69.

George Keenan, M.D. Rush Medical College, 1883; a Fellow of the American Medical Association; a prominent citizen and practitioner of Madison, Wis.; consul-general for the United States at Bremen, Germany, during the second term of office of President Cleveland; one of the founders of St. Mary's Hospital, Madison, Wis.; died at his home in Madison, March 4, from pneumonia, aged 55.

Harry Garrison Plymire, M.D. College of Physicians and Surgeons of San Francisco, 1900; a Fellow of the American Medical Association and coroner and public administrator of San Mateo County for three terms; founder of the South San Francisco Hospital and vice-president and director of the Bank of South San Francisco; died at his home in that city, February 27, from pneumonia, aged 38.

James S. Herron, M.D. University of Pennsylvania, Philadelphia, 1861; surgeon in the Confederate service throughout the Civil War; acting assistant surgeon, U. S. Army, from 1873 to 1875; on duty at the United States Navy Yards at Pensacola, Fla., during two yellow-fever epidemics; for nearly half a century a practitioner of Pensacola; died at his home in that city, February 20, aged 79.

Frederick Ashford Guthrie, M.D. Rush Medical College, 1896; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; local surgeon for the Illinois Central Railroad at La Salle, Ill.; a specialist on diseases of the eye, ear, nose and throat; died in the Durand Hospital, Chicago, February 28, from meningitis following diphtheria, aged 42.

Thomas Byrne, M.D. New York University, New York City, 1888; of West Hoboken, N. J.; physician to the Hudson County Penitentiary; surgical director of the North Hudson

Hospital, and visiting surgeon to St. Mary's Hospital, Hoboken, and Christ's Hospital, Jersey City; died in the German Hospital, New York City, March 2, from an intestinal disorder, aged 56.

Walter Linton Brown, M.D. College of Physicians and Surgeons, Baltimore, 1913; a veteran of the Spanish-American War with service as a member of the Hospital Corps in the Philippine Islands for eight years; superintendent of a hospital in Richwood, W. Va., since June, 1914; died in Mercy Hospital, Baltimore, February 23, from heart disease, aged 41.

Lyman Shoemaker Reber, M.D. University of Pennsylvania, Philadelphia, 1870; of South St. Louis, Mo.; for several years a member of the medical staff of the Harrisburg (Pa.) State Hospital; died at his home in South St. Louis, February 28, from poisoning from carbolic acid, believed to have been accidentally self-administered, aged 68.

Abraham C. Treichler, M.D. Jefferson Medical College, 1869; a Fellow of the American Medical Association; and a well-known practitioner of Lancaster County, Pa.; one of the organizers of the Elizabethtown (Pa.) Water Company; died at his home near Elizabethtown, February 27, from erysipelas following a cerebral hemorrhage, aged 70.

Jehu Little, M.D. Long Island College Hospital, Brooklyn, 1865; Jefferson Medical College, 1877; a pioneer practitioner of McLean County, Ill.; hospital steward of the Thirty-Third Illinois Volunteer Infantry during the Civil War; and for nearly half a century a practitioner of Bloomington; died at his home in Bloomington, March 11, aged 81.

Nicholas B. Delamater, M.D. Hahnemann Medical College, Chicago, 1873; formerly of Chicago; for many years professor of mental and nervous diseases and later emeritus professor in his Alma Mater; who went to Sanford, Fla., on account of his health in 1913; died in the Elgin State Hospital, March 11, from senile dementia, aged 67.

William Orlando Griggs, M.D. Jefferson Medical College, 1866; a life member and for twenty years chairman of the committee on science and art of the Franklin Institute, Philadelphia; a well-known student and collector of antique and modern firearms; died at the home of his son in Philadelphia, February 21, from heart disease, aged 70.

Robert Farnham, M.D. University of Pennsylvania, Philadelphia, 1867; of Washington, D. C.; formerly a member of the Medical Society and Medical Association of Washington, D. C.; one of the oldest members of the Sigma Chi Fraternity; died in the drawing room of a sleeping car near Altoona, Pa., February 23, aged 72.

Henry W. M. Washington, M.D. Jefferson Medical College, 1855; a member of the Medical Society of Virginia and for many years a practitioner of North, Matthews County; formerly an officer of the United States Navy and later a surgeon in the Confederate Navy; died in a hospital in Norfolk, Va., March 5, aged 79.

Murray Baldwin Kirkpatrick, M.D. Jefferson Medical College, 1879; formerly of Trenton, N. J.; founder of the Philadelphia Mission and a Baptist clergyman; for several years a medical missionary of the American Baptist Missionary Union in Burma; died at his station in Thebaw, Burma, February 10, aged 64.

Alexander F. Gillis, M.D. Bellevue Hospital Medical College, 1876; a member of the Medical Society of the State of Pennsylvania; for ten years chief surgeon at the Emergency Hospital, Carbondale, and later at the Carbondale City Private Hospital; died at his home in Carbondale, Pa., February 28, aged 60.

Fernand Louis J. M. de Verteuil, M.D. Edinburgh, 1905; M.R.C.S., L.R.C.P., London, 1904; of Vancouver, B.C.; a surgeon in the Royal Naval Reserve and a well-known specialist on tropical diseases; was lost at sea by the sinking of *H. M. S. Good Hope* in battle off the coast of Chile, in November, 1914.

Lewis E. Hemenway, M.D. Detroit College of Medicine, 1906; a Fellow of the American Medical Association; a member of the Vermont State Medical Society and formerly secretary of the Bennington County Medical Society; died at his home in Manchester Center, Vt., March 2, from pneumonia, aged 37.

Frederick Harlen Klaer, M.D. University of Pennsylvania, Philadelphia, 1904; a Fellow of the American Medical Association; instructor in medicine in his Alma Mater and chief of clinic in the Medical Dispensary of University Hospital, Philadelphia; died in the University Hospital, February 27, aged 37.

Charles B. Fry, M.D. Albany (N. Y.) Medical College, 1861; one of the oldest practitioners of central Illinois; for many years district surgeon at Mattoon, Ill., for the Illinois Central Railroad, and division surgeon for the Big Four System; died at his home in Mattoon, March 3, aged 74.

Horace E. Mann, M.D. Long Island College Hospital, Brooklyn, 1874; a member of the Wisconsin State Medical Society; a veteran of the Civil War; a member of the first city council and for several terms mayor of Marinette, Wis.; died at his home in Oak Park, Ill., March 3, aged 70.

John Lincoln Bromley, M.D. University of Pennsylvania, Philadelphia, 1890; a member of the Medical Society of the State of Pennsylvania, ophthalmologist to the Episcopal and St. Timothy's hospitals, Philadelphia; died at his home in Philadelphia, March 4, from heart disease, aged 46.

Cuvier Lipscomb, M.D. Medical College of Virginia, Richmond, 1865; a Confederate veteran; local surgeon of the Missouri, Kansas and Texas Railway at Denton, Tex.; formerly president of the Denton County Medical Society; died at his home in Denton, February 18, aged 74.

W. Irving Burns, M.D. University of Vermont, Burlington, 1896; University of Buffalo, 1897; of Roanoke, Va.; formerly of Witt, Ill.; and a member of the Illinois State Medical Society; died suddenly from heart disease on a passenger train near Lithia, Va., March 1, aged 60.

Henry William Caldwell, M.D. University of Buffalo, 1866; a veteran of the Civil War in which he served as hospital steward of the Eighth Michigan Volunteer Infantry; coroner of Oswego County, N. Y., from 1876 to 1885; died at his home in Pulaski, N. Y., February 24, aged 73.

Thomas E. R. Miller, M.D. Miami Medical College, Cincinnati, 1866; a veteran of the Civil War; for three years health officer of Frederick County, Md.; formerly a member of the state legislature; died at his office in Lewistown, Md., February 27, from heart disease, aged 73.

Blannerhassett H. Smothers, M.D. University of Alabama, Mobile, 1885; a member of the Medical Association of the State of Alabama and for more than twenty years a practitioner of Shelby County; died at his home in Vincent, Ala., February 18, from pneumonia, aged 50.

Stuart Harry Benton, M.D. University of Buffalo, 1870; Bellevue Hospital Medical College, 1879; formerly a member of the Medical Society of the State of New York; a member of the Association of Physicians of Long Island; died at his home in Brooklyn, March 2, aged 69.

Henry Clay Burcham, M.D. University of Michigan, Ann Arbor, 1889; formerly a member of the Indiana State Medical Association and for many years a practitioner of Richmond, Ind.; died at his home in Abington, Ind., Dec. 26, 1914, from cerebral hemorrhage, aged 54.

William W. Mosby, M.D. University of Louisville, Ky., 1846; surgeon of volunteers throughout the Civil War; for two terms a member of the Missouri State Senate; the oldest practitioner of Ray County, Mo.; died at his home in Richmond, February 26, aged 90.

Gustavus Judson Nelson, M.D. Medical School of Maine, Brunswick, 1877; for fifteen years superintendent of the public school of China, Maine, and for thirteen years secretary of the local board of health; died at his home in China, February 19, aged 68.

David John Minchin, M.D. University of Toronto, Ont., 1885; first president of the Waterloo County (Ont.) Medical Association and one of the organizers of the Berlin and Waterloo County Hospital; died at his home in Berlin, February 27, aged 56.

Elisha Hammond Lyford, M.D. Medical School of Maine, Brunswick, 1866; for many years a practitioner and druggist of Vinal Haven, Maine, but for the last six years a resident of Dover, Maine; died at his home in that city, Dec. 19, 1914, aged 74.

Taylor F. Ealy, M.D. University of Pennsylvania, Philadelphia, 1874; also a clergyman and for many years engaged in missionary work among the Indians of New Mexico; died at his home in Schellburg, Pa., February 20, from pneumonia, aged 66.

Osborne Greene Lord, M.D. Medical School of Maine, Brunswick, 1870; a practitioner of Kaukauna, Wis., since 1872; for twenty years treasurer of the Outagamie County Board of Education; died at his home February 14, aged 69.

James Christopher Hull (license, Rhode Island, 1895), for forty-four years a practitioner of Providence, R. I.; died at his home in that city, March 2, from heart disease, aged 70.

Raynor Spalding Freund, M.D. University of Michigan, Ann Arbor, 1899; a member of the Montana State Medical Association and a prominent practitioner of Butte, Mont.; died at his home, February 26, from nephritis, aged 42.

Alfred Walter Maynard, M.D. College of Physicians and Surgeons in the City of New York, 1872; a Fellow of the American Medical Association and an examiner in lunacy in New York City; died at his home, March 1, aged 63.

Andoniram Judson Collar, M.D. University of Michigan, Ann Arbor, 1884; of Yreka, Cal.; who was operated on recently in St. Francis' Hospital, San Francisco; died at the home of his son in Alameda, Cal., February 21, aged 63.

Walter Montgomery James, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1869; founder and for many years editor of *The Homeopathic Physicians' Journal;* died in his office in Philadelphia, February 24, aged 65.

Charles Ellsworth Boyd, M.D. Baltimore Medical College, 1892; University of Wooster, Cleveland, 1892; a Fellow of the American Medical Association; died at his home in Newton, Ia., February 27, from pneumonia, aged 45.

James Peckham Campbell, M.D. Syracuse (N. Y.) Medical College Eclectic, Rochester, N. Y., 1854; for many years surgeon of the Cunard Line; died at his home in New York City, February 28, from nephritis, aged 81.

Susan Grace Dougall, M.D. Woman's Medical College of the New York Infirmary for Women and Children, 1889; of Montreal; who had lived in England for the last seven or eight years; died Dec. 5, 1914, aged 62.

William Ernest Brown, M.D. Trinity Medical College, Toronto, 1891; of Peterboro, Ont.; died in that city, March 2, from the effects of strychnin, self-administered it is believed, with suicidal intent, aged 55.

Richard Finlay, M.D. Medical College of Ohio, Cincinnati, 1880; of Centerville, S. Dak.; a pioneer practitioner of South Dakota; died suddenly in the opera house in Centerville, February 24, aged 71.

Harmon L. McCullough, M.D. Western Reserve University, Cleveland, 1883; of Cookport, Pa.; also a druggist; died in a sanatorium in Battle Creek, Mich., February 25, from septicemia, aged 61.

W. Thad Hunt, M.D. Medical College of Georgia, Augusta, 1888; of Townville, S. C.; a member of the South Carolina Medical Association; died in the Anderson (S. C.) Hospital, Dec. 21, 1914.

Sherman Eldon Carlton, M.D. Cleveland College of Physicians and Surgeons, 1902; a Fellow of the American Medical Association; died at his home in Cleveland, February 7, from nephritis, aged 51.

George B. McClellan Hill, M.D. College of Physicians and Surgeons, Chicago, 1898; specialist in diseases of the eye, ear, nose and throat; of Paris, Ill.; died at his home in that city, February 11, aged 51.

Thomas Henry Maguire, M.D. Harvard Medical School, 1900; a member of the staff of the Carney Hospital, Boston; died at his home in North Dorchester, Boston, March 5, from pneumonia, aged 38.

Samuel Henry Rabuck, M.D. Rush Medical College, 1896; a member of the Medical Society of the State of New York; died at his home in Huntington, Long Island, March 3, from pneumonia, aged 44.

William R. Grissom, M.D. University of Tennessee, Nashville, 1886; formerly a member of the Kentucky State Medical Association; died at his home in Columbia, Ky., February 22, aged 61.

William Warner, M.D. Columbus (Ohio) Medical College, 1879; is reported to have committed suicide, March 11, by hanging himself to a rafter in his home in Vera Cruz, Ind.

Alvin C. Hiester, M.D. Rush Medical College, 1880; a member of the Illinois State Medical Society; died at his home in Chicago, February 25, from pleuropneumonia, aged 60.

Henry Irving Land, M.D. Medical College of Virginia, Richmond, 1911; a member of the Medical Society of Virginia; died at his home in Norfolk, Va., February 23, aged 27.

David McCaw, M.D. Medical College of Virginia, Richmond, 1884; a member of the Medical Society of Virginia; died at his home in Richmond, Va., February 27, aged 57.

Alphonsus Vincent King, M.D. College of Physicians and Surgeons, Chicago, 1909; died at his home in Chicago, February 26, from pneumonia, aged 31.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI

A Chapter with a Sherlock Holmes Flavor

During the week beginning February 21 an editorial and a Propaganda article dealing with the activities of the Wine of Cardui concern were prepared and published in THE JOURNAL for February 27. The final forms of THE JOURNAL are printed, and mailing commences, on Thursday of the week of issue, although the publication does not reach subscribers until Saturday. These chronological details are given for reasons that will be apparent later.

THE JOURNAL'S articles (editorial and Propaganda) called attention, among other things, to the activities of detectives and other employees of the "patent-medicine" interests, since the Wine of Cardui suits had been instituted. Passing notice was given to the case of an individual who had posed as a visitor to Chattanooga and had ingratiated himself into the new church and into the confidence of its pastor, the Rev. C. H. Myers, apparently with the idea that "information" was to be obtained from those who left the First Methodist Church of Chattanooga after the Wine of Cardui exposures. THE JOURNAL'S articles containing this material went to press, as has been said, Thursday morning, February 25. On Friday morning, February 26, the Chattanooga *Times* came out with a "story" headed:

DECLARE IT CONSPIRACY

FRIENDS OF JOHN A. PATTEN SECURE INTERESTING INFORMATION

'Westerner' Is Quoted in Reporting Dr. Myers

Newell Sanders Credited With First Thought of Securing the Thunder for the Attack on Mr. Patten in the Journal of the American Medical Association

The gist of the *Times'* article was to the effect that the exposés that have appeared in THE JOURNAL regarding Wine of Cardui were inspired originally by an ex-United States senator, Mr. Newell Sanders of Chattanooga. Also that material had been furnished for such articles by the Rev. C. H. Myers of Chattanooga, late pastor of the First Methodist Episcopal Church of that city and now pastor of the Pilgrim Congregational Church. Further it was declared that the American Medical Association had recently had a Mr. Mattson go to Chattanooga to obtain additional information on Wine of Cardui and its owners which information was to "appear in the New York *Tribune* and other periodicals." Barron referred, also, to the case of the Chattanooga Medicine Company against Dr. Dowling, president of the Louisiana State Board of Health. He alleged that Mr. Myers had stated that "the American Medical Association was financing the Dowling attack against Patten" and that it "had paid Creel to write the articles in *Harper's Weekly*."

The allegations, published by the Chattanooga *Times*, were made by one Benjamin J. Barron described by the *Times* as a "western business man" who had been visiting in Chattanooga. The *Times* followed up this first roor-back with a second, a day or two later, in which it published a photographic reproduction of a private letter of introduction to Mr. Mattson given by the Rev. Mr. Myers to Barron.

THE STORY OF THE SCRAP-BOOK

The apparent intent of the *Times'* articles was to give color to Barron's charge that Mr. Myers had furnished THE JOURNAL with a scrap-book containing information regarding Wine of Cardui or its owners. The letter of introduction brought by Barron to Chicago was to a Mr. Mattson,

an old resident of Chattanooga, now living in Chicago. Mr. Mattson, who represents the Cooperative Medical Advertising Bureau of various state medical journals, has a desk in the Association building. While technically, in part, in the employ of the American Medical Association, he has no relation whatever to THE JOURNAL, although he is, of course, more or less familiar with THE JOURNAL and its work. He and his family spent their Christmas holidays with relatives in his old home, Chattanooga.

Having been an active member of the First Methodist Church of that city, Mr. Mattson met the ex-pastor of that church, Mr. Myers. Naturally, Mr. Mattson was interested in the events that had led to the formation of the new church. Mr. Myers, being busy, was not able to go into details but he told Mr. Mattson that he had a scrap-book containing newspaper clippings and a few letters of commendation that gave a chronological review of the entire matter. This, Mr. Myers thought, might interest Mr. Mattson who was unfamiliar with the fight that had been made against the minister, and he offered to let Mr. Mattson take this book so that he might read it on the train on his way back to Chicago.

This, then, is the scrap-book about which so much is being made. It contained such information regarding John A. Patten, Wine of Cardui or the Chattanooga Medicine Company as had appeared in the Chattanooga newspapers—AND NONE OTHER! The few letters contained in the book were of a personal nature and dealt wholly with church matters. Had Mr. Mattson known it, THE JOURNAL had a much more exhaustive scrap-book of its own of the newspaper comments dealing with the subject.

ENTER BARRON, THE SLEUTH

Now to go back a little in this thrilling story of "Barron the Sleuth, or Trailing the Medical Ogre to Its Lair." Early in December, an individual "blew in" to Chattanooga and put up at the most expensive hostelry in the city, the Hotel Patten. He registered as Benjamin J. Barron and casually dropped word that he was a prosperous Colorado business man stopping at Chattanooga for his health. He exhibited letters indicating that he was an officer and stockholder in a large Denver corporation.

From the first, Mr. Barron assiduously cultivated the company of the Rev. C. H. Myers and showed the liveliest interest in the new church and its more influential members. He went further. After donating liberally to the new church, accepting the hospitality of Mr. Myers' home and table, and presenting the pastor with a handsome bible inscribed "Yours for a Glorious Success," he capped the climax by "joining" the church. Mr. Barron was, in fact, very close to Mr. Myers.

Before going further, let it be said here that THE JOURNAL'S investigations show that Barron, the "western business man" hailed originally from that breezy western village, Boston, Mass., where he was employed as a bookkeeper. THE JOURNAL has in its possession information regarding Barron that would make interesting reading. This by the way.

No sooner did Benjamin J. Barron learn that Mr. Myers had lent Mr. Mattson his scrap-book than he, sleuth-like, sniffed mystery and dark plots. Hardly had Mr. Mattson left Chattanooga for Chicago than it became necessary for Mr. Barron to make a "business trip" to Chicago. Would Mr. Myers give him a letter of introduction to Mr. Mattson? Certainly. Might he have the pleasure of bringing back the scrap-book so that he could while away the tedium on the train? Again, certainly! Hence the letter of introduction (photographically reproduced in the Chattanooga *Times*) from Mr. Myers to Mr. Mattson, in which Mr. Myers suggests that Mr. Barron be given the scrap-book to bring back to Chattanooga.

As soon as Barron had obtained this letter of introduction he, with a fine delicacy seldom found in "western business men," had it photographed, presumably before he left Chattanooga. Certain it is that the photograph was made before the original letter was presented to Mr. Mattson, for the letter has been in the latter gentleman's possession ever since.

Mr. Barron arrived in Chicago, put up at one of the most expensive hotels and while here spent somebody's money with easy abandon. He called Mr. Mattson up just about closing time one Saturday afternoon and made an appointment with him at the Association's building. A member of THE JOURNAL staff dropped in during the interview. Barron's story was a rehash of the one told in Chattanooga. He "flashed" his "planted" credentials to show that he was prominent in oil circles out in Colorado and Wyoming. Always, however, he came round to that perenially interesting subject, Wine of Cardui, and finally suggested that, if agreeable, he could take the scrap-book now.

But alas! The scrap-book had already been returned to Mr. Myers, through the prosaic medium of an express company, before Sleuth Barron arrived in Chicago. The disappointment must have been acute; it could only have been more poignant had Barron actually got the book in his possession and found what an innocuous affair it was. His employers would hardly have considered it worth while to photograph even the personal letters. Having learned that the coveted volume had been returned, Barron at once exhibited a burning desire to become better acquainted with Mr. Mattson, presumably with the idea that he might worm out of this gentleman the fearsome secrets of the villainous conspiracy supposed to be buried in the depths of the scrap-book. Invitations to dinner at expensive hotels and invitations to theaters (at scalpers' prices) were given to Mr. Mattson. They were not accepted. Similar invitations were extended to a member of THE JOURNAL staff, presumably in the belief—unfounded—that he was familiar with the contents of the scrap-book. These, too, were "turned down." We mention these details so that Mr. Barron's expense account can be checked up by his employers!

SMITH, BARRON, ET AL.

To digress for a moment. While in Chicago Barron was in communication with a detective who went under the name of Smith and put up at the Hotel LaSalle. Smith posed as a "journalist" seeking data for an article showing the evils of prohibition which, he alleged, had driven the "lumberjacks" of the southern camps to drink alcohol-containing "patent medicines." Later Smith turned up in Chattanooga where he, too, interested himself in the new church and its pastor. He repeated the same story about seeking information on "patent medicines" containing alcohol. He was, he said, seeking "local color" for his article. But this, as Kipling says, is another story.

After hanging around in Chicago for about a week—never using a street car when a taxicab would do as well—Mr. Barron flitted back to Chattanooga. THE JOURNAL in the meantime had learned Barron's true character and suggested that Mr. Mattson notify Mr. Myers of the presence of this unconscionable sneak in his new church. This was done and Mr. Barron found on his return to Chattanooga that his usefulness to his employers—for this particular "job," at least—was over. All he had to show for the money that had been spent was a photograph of a private letter of introduction! This was reproduced in facsimile in the Chattanooga *Times*. The "patent medicine" mountain had indeed labored and brought forth a ludicrously small mouse.

SUMMARY OF BARRON'S ACTIVITIES

Summed up, the series of incidents may thus be given:

1. Benjamin J. Barron, "western business man," registers at "Hotel Patten," Chattanooga.

2. Barron exhibits great interest in the new church and its pastor, donating handsomely, presenting a bible, accepting hospitality of the pastor and other members of the church and finally "joining" the church.

3. Barron learns that Mr. Myers has loaned his scrap-book to Mr. Mattson to read on his way to Chicago.

4. Barron immediately leaves for Chicago, "on business."

5. Before leaving Barron asks for, and receives, a letter of introduction from Mr. Myers to Mr. Mattson and asks for, and receives, permission to bring back the scrap-book.

6. As soon as he gets the letter of introduction Barron, or his employers, photograph it.

7. Barron's record investigated.

8. Barron fails to get scrap-book and returns to Chattanooga.

9. Barron makes various false charges claimed to have been based on his intimate friendship with Mr. Myers and members of the new church.

10. Chattanooga *Times* publishes alleged interview with Barron and a letter from Barron; it also photographically reproduces the private letter given Barron.

11. Thus, based on "faked" evidence furnished by a stranger of unsavory antecedents, a self-admitted sneak and abuser of confidence and hospitality, the *Times* articles have all the appearance of an attempt to discredit well-known and reputable citizens of Chattanooga.

This, then, is in brief the story of just one phase of the protean activities that have been exhibited since The Journal denounced Wine of Cardui as a fraud. One of the most remarkable features of this particular exposure is the widespread attempt that has been made to credit—or accuse—other agencies than The Journal with responsibility for the Wine of Cardui articles. In order to place the facts before our readers, the following statements are made:

SOME FACTS

1. The articles on Wine of Cardui and the concern that makes it are but an incident of The Journal's campaign of public education on the subject of frauds in medicine.

2. The Journal alone is responsible for the investigation of Wine of Cardui and its method of exploitation.

3. Mr. Myers and Mr. Sanders were unknown to The Journal until months after the article appeared which caused Patten and his company to sue.

4. Mr. Myers and Mr. Sanders have never furnished The Journal any information for articles relative to Wine of Cardui, its makers or its owners.

5. The statements of Barron concerning The Journal and *Harper's Weekly*, the New York *Tribune* and the Louisiana State Board of Health are unqualifiedly false.

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. Previous instalments of abstracts appeared in The Journal, Nov. 14 and 21, Dec. 12, 1914, Jan. 2 and 30, and Feb. 20, 1915.

Colchi-Sal

Colchi-Sal, said to be made by the Anglo-American Pharmaceutical Co., Ltd., New York, is advertised, sold and "guaranteed" (sic) by E. Fougera and Co., Inc., New York. According to the label of a recently purchased specimen:

"Each Capsule contains Cannabis Indica (Active Principle of) 1-500th Grain (⅛ Milligram); Colchicine (Crystallized) 1-250th Grain (¼ Milligram); Methyl Salicylate 20 Centigrams."

The advertising circular around the bottle adds that the mixture also contains "appropriate aromatic adjuvants."

It is recommended in "Gouty and Chronic Rheumatic Manifestations," "acute cases of Gout," "intestinal autointoxication or dyspepsia," "bilious headaches," etc. Salicylates are generally recognized as valuable in acute manifestations of acute articular rheumatism; colchicum is useless in these conditions. Both salicylates and colchicum are practically useless in chronic rheumatic and in chronic gouty affections. For dyspepsia, bilious headache, etc., salicylates are distinctly contra-indicated and the drastic purgation produced by colchicum would not be thought desirable. Though methyl salicylate administered internally is not generally considered so efficient as sodium salicylate, it is asserted that it

". . . is found far more effective than salicylate of soda or other salicylic derivatives when given in conjunction with colchicine as Colchi-Sal."

Further, the highly improbable and unsubstantiated claim is made that "the active principle of *Cannabis indica*" (whatever that may be) "corrects any tendency of the colchicine to irritate the gastro-intestinal tract" and that the "appropriate aromatic adjuvants" "prevent intolerance of the methyl salicylate."

Colchi-Sal is put up in a way to appeal to the public; the bottle has the name "Colchi-Sal" blown in the glass; the label gives full instruction for the use of Colchi-Sal, and also the price, suggesting that the preparation may be freely purchased. Wrapped around the bottle is a circular advising its use in various affections.

The physician who acts on the advice that it is well to "insist on the pharmacist dispensing original bottles . . ." of the "little green capsules" actually suggests to his patient the use of this preparation of methyl salicylate and colchicum in conditions in which these drugs may do much harm and in which proper treatment is imperative.

Colchi-Sal is typical of unscientific ready-to-take proprietaries. It was held ineligible for New and Nonofficial Remedies because of its secret composition, viz., the unknown nature of the "active principle of Cannabis indica" (Rule 1); because the circular in the package and the name blown in the bottle constitute advertisement to the laity (Rule 4); because the claim that cannabis indica removes the gastro-intestinal irritation, and the claim of the superiority of methyl salicylate are unwarranted therapeutic claims (Rule 6); because the name does not indicate the presence of the habit-forming cannabis indica, and because of its unscientific composition (Rule 10).

Waterbury's Compound

The Waterbury Chemical Company having requested that the Council reconsider its action of four years ago (see The Journal A. M. A., Oct. 9, 1909, p. 1201) on the product then known as Waterbury's Cod-Liver Oil Compound, now called Waterbury's Compound, the matter was submitted to a referee. The referee reported that the statement now made as to the composition of this product is as follows:

"Made from Cod Liver Oil, Digestive Ferments, Malt Extract Unfermented, Hypophosphites Comp. Special, Ext. Cherry, Eucalyptus, Aromatics, etc."

He held that the Waterbury Chemical Company has not submitted satisfactory evidence to indicate that the objections of the Council's former unfavorable report have been met; that there is no evidence that the product is a substitute for cod-liver oil in any way; and that under the present methods of exploitation it constitutes what is at least an inferential fraud; and recommended that no further consideration be given to Waterbury's Compound. The report was adopted by the Council.

Correspondence

A Few Letters on the Harrison Law

[From the large number of letters received regarding the Harrison law and its provisions, a few discussing different points of the law have been selected, and are printed herewith as illustrations of the inquiries being received. As some of these letters were probably not intended for publication, the names are in those cases omitted. They will serve to illustrate the wide range of discussion which is being excited by this measure, as well as some of the difficult and intricate questions which may be raised regarding the operation of the law.

Since its last issue, The Journal has taken up with the Commissioner the entire question of the operation of the law as applied to physicians. The Journal will be glad to act as the intermediary between the physicians of the country and the Commissioner of Internal Revenue at Washington, to whom a large number of inquiries have been directed personally. Physicians desiring information on any of the provisions of the bill are requested to send their letters to

THE JOURNAL. They will be classified and suitable inquiries submitted to the Commissioner of Internal Revenue for official replies, which will then be published in THE JOURNAL for the information of its readers. [See editorial, Additional Narcotic Law Regulations, this issue, p. 1002.—ED.]

BELIEVES THE LAW TYRANNIC

To the Editor:—I have been surprised to observe that among so many inquiries about the new Harrison law there have been but few adverse criticisms, although it is justly liable to adverse criticism.

1. The law is an usurpation by Congress of the police power of the states. The right of Congress to impose a revenue tax on any article is admitted, but in the case of narcotics the Congress assumes authority to regulate use, distribution and sale. If it is competent for the Congress to regulate the sale and distribution of one drug or one group of drugs, why not of another, and why not of all? If these premises be admitted, it is not apparent why the Congress may not assume the enactment of general medical practice laws and complete the federal usurpation of state authority.

2. The necessary blanks for ordering supplies of the listed drugs are furnished by a government monopoly at an exorbitant price. Any job printer is glad to furnish similar printed stationery for $3.50 per thousand or less, while the government price is at the rate of $10 per thousand.

3. A statutory offense is arbitrarily and unjustly elevated into a felony, and technical violations of the law, consisting of acts not in their nature criminal, are treated as major crimes. In case of criminal use of narcotic poisons or intent to use—if such use or intent to use be proved—the laws of the several states furnish the needful machinery of justice, and it is their prerogative to deal with such offenders.

4. The most serious of the defects of the Harrison law is in the excessive penalties provided for violation of its rules.

To denounce savage and extreme penalties against mere statutory offenses is a species of cruel tyranny worthy of the dark ages, but a disgrace to our boasted twentieth century enlightenment.

"It is excellent to have a giant's strength,
But it is tyrannous to use it like a giant."

W. K. MCCOY, M.D., Gum Spring, Va.

WHAT TO DO FOR THE DOPE FIEND

To the Editor:—You have answered some important questions on the Harrison bill in the last issue of THE JOURNAL. But I would like to know what the physician is to do for the poor dope fiend who comes pleading for a supply of their favorite drug to tide them along, to prevent them from "going crazy or committing suicide." I noticed a report from Washington to-day saying that it was discretionary with the physician, but I would like to have your interpretation. G. G. HARMAN, M.D., Huntingdon, Pa.

HE BOWS TO THE LAW

To the Editor:—A patient sent his 12-year-old son for medicine. He had spasmodic colic, to which he is subject three or four times each year. I was sick and unable to go. Could I have sent him say one-fourth grain dose of morphin, which would have been necessary to relieve him, if I kept a record of the same on my book?

Am I to understand that the Harrison law allows me to give say eight doses of one-fourth grain of morphin to patients who call at my office when sick, to take home with them if they need it, and I keep a record of the same?

Please be explicit, as different stories are in vogue here. Is there any state law in Ohio which would conflict with your advice as to our duty under the Harrison law? We were always taught that medicine was a liberal profession and *second to none other*, and believe that the U. S. government would not hamper us with any restrictions *save for the good of society*, and we in Ohio humbly bow to this and will do our whole duty. J. J. M.

GROUNDS FOR PRESCRIBING

To the Editor:—Relative to the narcotic law, will you kindly tell me on what grounds shall we prescribe morphin, etc., to chronic, habitual users? Those whom you are absolutely sure will be crazy and do bodily harm to themselves probably and those around them, if without it; those who have used it for years in large quantities. Will thank you for an answer to this inquiry.

H. W. JARRELL, M.D., Mansfield, La.

WHAT IS HIS DUTY?

To the Editor:—I am just starting out to practice and wish to get started right. I have in my community a woman who has used morphin sixteen years. Since the Harrison act, she is unable to secure it without a prescription and has come to me to write them. Can I do it lawfully? If so, is it my duty to do it or not to do it? If you will kindly give me this information, you will oblige one who desires to do right.

C. B. R.

WHY NOT TREAT THE ADDICTION?

To the Editor:—Kindly answer the following question and oblige:

I am a regular practicing physician, graduate of Jefferson, 1876. Am registered.

I have a patient who has been a regular tinct opii fiend for many years. As she cannot get it under the new law, am I in the construction of the Harrison act safe, or is it lawful for me to write her prescriptions? A. M. P.

NOT PERMISSIBLE

To the Editor:—Kindly advise me if it is permissible under the Harrison narcotic law for physicians to leave prescription blanks bearing the signature and registry number at the drug store so that they may be filled out by the druggist under telephone instructions from the physician? The druggist would also append the name and address of the patient to the prescription. N. P. C.

AN INCUMBRANCE

To the Editor:—Has the American Medical Association or any of the medical societies in the United States done anything toward opposing the Harrison law?

I really believe that many of the medical profession will consider the law more of an incumbrance upon them and not effective as intended.

WILLIAM E. STYAN, M.D., Quincy, Cal.

Exposure of Appendix by Cullen's Method

To the Editor:—The article on this subject by Neill (THE JOURNAL, Jan. 23, 1915, p. 299) was read with much interest by myself and assistants, but none of us could see what advantage there was in the use of the tapes, while we could see many disadvantages, particularly in the loss of time.

I have operated on many retrocecal appendixes; have had at least a half dozen since this article appeared. Such appendixes are usually more or less adherent, and many of them are in different stages of gangrene. They can usually be found readily by palpation, by following the wide band, or by locating the junction of the cecum and ileum. The cecum being supported, or in some cases the cecal end of the appendix caught with a hemostat, the surgeon can palpate the deep-seated appendix, and readily accomplish its removal. Its enucleation usually takes about one minute. The meso-appendix is caught with a hemostat, the appendix detached with scissors, and the stump treated in the usual way. The meso-appendix is then ligated. Occasionally there will be a bleeding point from adhesions, but usually there is no further hemorrhage, and the incision, whether gridiron or right rectus, is closed.

J. F. BALDWIN, M.D., Columbus, Ohio.

[The foregoing letter was referred to Dr. Neill, who replied:]

To the Editor:—This method is advocated only in cases of subacute or chronic appendicitis. For years, surgeons have been passing a small piece of gauze or tape through the meso-appendix at its cecal attachment. I have had the opportunity of witnessing many appendix operations performed at the Johns Hopkins Hospital and elsewhere, but

never saw the tape method carried to its full extent of usefulness until assisting Dr. Cullen. Furthermore, many surgeons when visiting the clinic have expressed their surprise and gratification at the ease with which the retrocecal and adherent appendix can be removed by this method.

Dr. Baldwin's reference to the loss of time reminds me of one of America's well-known surgeons watching another equally well-known surgeon removing an appendix. After watching the operation for a few moments, the visiting surgeon said, "John, if ever I am operated on for appendicitis, I want you to do it, but I want you to promise me one thing — that you will take ten minutes longer than usual — *these will be very valuable ten minutes to me.*"

It takes about fifteen or twenty seconds to pierce the mesoappendix with a pair of blunt Kelly forceps, to draw a piece of tape through and then to grasp the two ends of the tape with the same forceps. The time actually consumed in placing three or four tapes would therefore be, roughly speaking, from a minute to a minute and a half.

If Dr. Baldwin will try this method in some case in which, after making his gridiron incision, he finds great difficulty in exposing his appendix, I feel sure he will resort to it again when encountering other and similar cases. I really want to thank him for his letter, as it again gives me an opportunity to emphasize to the many readers of THE JOURNAL the practicability of this method.

WILLIAM NEILL, JR., M.D., Baltimore.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PREMATURE BALDNESS

To the Editor:—1. What is the most likely cause of premature baldness occurring between the ages of 18 and 25 years?

2. What treatment would you advise?

J. C. HOLLEY, M.D., Pine Barren, Fla.

ANSWER.—1. The most that can be said of premature baldness is that it is senile baldness coming on before the usual time. Of its causes we know actually nothing. We do, however, know the sequence of events.

Between the skin of the scalp and the skull there is a thick layer of fat to which the skin is loosely attached and on which it is freely movable. In civilized man, who lives in houses and wears hats, the following changes take place as he approaches later life: This fat layer gets thinner; the scalp becomes more firmly attached to the skull and less movable; the skin becomes more tense, and with these changes the hair becomes thinner and thinner over the top of the head. Finally, in extreme cases, the hair disappears and there is left a bald, glistening crown closely drawn over the skull. This sad picture is senile, spontaneous or simple baldness. Premature baldness is the same thing, only occurring before the age when these changes, which we ordinarily attribute to old age, are expected to appear.

What is the process that has taken place here? There has been a disappearance in great part of the subcutaneous fat; the scalp has become much more dense in structure — has become fibrous or sclerotic — and with this shrinking in the scalp there has been a gradual shrinkage in the hair follicles until they entirely disappear, and are replaced by fibrous tissue. It is a process much like that taking place in many of the tissues in later life, and in some of the organs often as a result of disease. It resembles closely, for example, the destruction of the epithelial tubules in the kidneys that takes place as a result of chronic inflammatory processes. And it is a process that can readily be explained as a result of a chronic inflammatory process in the scalp. This is a reason for one view that all so-called senile baldness is really due to dandruff or seborrheic dermatitis. The sounder view seems to be that the change may be simply one of senile atrophy occurring as a primary process and not secondary to any diseased condition of the scalp.

The explanation of the fact that baldness is usually confined to the top of the head probably is that the increased tension of the scalp resulting from its shrinkage exerts its chief pressure on the top of the head. If one pulled a bag tightly down over the head it would exert much more pressure on the top of the head than around the border.

Simple or senile baldness, in spite of its name, usually begins to manifest itself early. The thinning of the hair becomes apparent before the age of 30 in 80 per cent. of the cases, and persons who are not nearly bald at 50 are likely to keep a passable covering of hair until they reach old age.

The definite causes of simple baldness are uncertain, and there is much room for speculation. As a result, all sorts of factors are invoked to explain it from the wearing of tight hats to improper methods of breathing. Some would go so far as to say there is no such thing and to attribute all of the cases to seborrheic dermatitis. This is an extreme view, but certainly the ravages of dandruff have to be taken into account in all cases of baldness, and in considering the causes of the condition, no separation can be made between simple baldness and that due to dandruff.

Baldness is much commoner in men than in women. This is true, however, only of complete baldness; thinning of the hair as a result of nervousness and other depressing influences on the health is commoner, perhaps, in women than in men. The reasons for the occurrence of baldness less frequently in women than in men are probably various. In the first place, women give much more attention to the toilet of the hair — to brushing it, and to keeping it clean and in good condition; their hats are light things that merely rest on the hair, and finally, the fat layer of the scalp, as of the skin generally, is more abundant in women than in men and atrophies later in life. Man sometimes is inclined to have it that baldness is a sign of intelligence and a result of mental labor and that that is the reason it is commoner in men. This fiction is one of the few consolations that can be urged for the condition, and it seems mean to disturb it, but, truth to tell, there is no ground for it. Baldness may make one look wiser, but it occurs indifferently in the great and the small, and it is no more a sign of wisdom than long hair is of genius.

The broad fact seems to be that in the common occurrence of baldness we have a manifestation of a transitional stage in man's evolution. The hair on the body now is the vestige of a former abundant coat. In the economy of nature, structures atrophy and disappear when they cease to have function, and the need of warmth and other protection afforded by the hair is no longer of great importance to man. Man now uses a hat instead of relying for protection for his head on a shock of hair as his ancestors did, and, as a result, in spite of all his coaxing, the shock of hair is gradually vanishing. This does not mean that you and I can save our hair by discarding our hats. We are a result of our ancestors, and to save our hair we would have to discard the hats of all our ancestors for scores of generations back.

According to this view, heredity is one of the great causes of baldness, and all statistics indicate that this is true. In the statistics of Jackson and of White, the condition is due to heredity in from 30 to 40 per cent. of the cases.

Mistreatment of the hair is also an important factor in the production of baldness. Daily wetting of the hair, especially if no attention is given to drying it, keeping it poor in oil by excessive use of soap and water without supplying any fat in place of that removed, failure to keep it clean, excessive exposure to sunlight, the indiscriminate use of drugs, particularly "hair tonics," and overzealous treatment by barbers and hairdressers — all of these causes are influential in the production of baldness, and are to be guarded against, particularly in the care of hair of those who have already a predisposition to the condition.

The effects of heavy and tight hats by interfering with the circulation of the scalp is considered to be of great importance, and there can be little doubt that it is a factor to be considered. Hats should be light. They should provide for circulation of air, and should not bind the head. It can at least be said for women's hats that usually they are better in these respects than men's.

But after all other factors have been considered, we must still come back to seborrheic dermatitis — dandruff — as the most important cause, and the one to which most care must be given in preventing baldness. According to White's statistics, it is a factor, and perhaps the chief factor, in 79 per cent. of the cases; according to Jackson's, in 72 per cent., and according to Elliot's in 91 per cent.

2. The care of the hair to prevent baldness or to stop the progress of baldness is the same as that for the hair in general.

In the first place, the scalp should be kept clean. The hair should be brushed daily, and the hair and scalp shampooed as often as necessary for cleanliness. The hair should not be allowed to remain dry and lusterless from lack of oil, but, if necessary, should be oiled lightly. For this purpose the best applications are olive oil, sweet almond oil, petrolatum or liquid petrolatum. Keeping the hair devoid of all oil is one of the commonest faults of the present taste as to its toilet. This does not mean that it should be smeared with bear's grease; an excess of fat in the hair becomes rancid and is harmful. All that is needed is that it should have enough oil in it to retain its gloss and pliability — distinctly not an excess.

The promiscuous application of "hair tonics" and other nostrums is regarded by some authorities as an important cause of baldness. These haphazard applications, without any regard to the indications of the individual case, are at best valueless. The same is true of the numerous activities of barbers and hairdressers, when their efforts go beyond the use of measures directed merely to cleansing the hair and scalp. Their singeing the hairs, their various methods of massage, "hair tonics" and "hair restorers" and "scalp treatments" applied indiscriminately, without intelligent appreciation of the indications to be met, may be harmful; they are at best useless forms of diversion. There is no objection, however, to a good shampoo by a careful and clean barber or hairdresser. Having it done for one is a form of luxury.

Massage of the scalp as a measure to check the falling of hair is of some service when the scalp is free from dandruff. With dandruff present, it is of doubtful value or harmful. In massage of the scalp, all that is necessary is to give it a good rubbing, carried only to the point of producing a feeling of "life" and glow. This requires no special skill, but can be done for one more easily than one can do it oneself. Mechanical massage offers no advantages over simple rubbing, and is liable to be too vigorous.

WANTED: REPORTS OF NITROUS OXID-OXYGEN DEATHS

To the Editor:—I have in preparation a paper on deaths from nitrous oxid-oxygen anesthesia, and am anxious to get reports of as many of these as possible. I have already obtained a considerable number, and have thus far found that these deaths have not taken place as the result of asphyxia, as so positively claimed by enthusiastic writers on this anesthetic, but they have occurred from cessation of the heart's action and with the startling suddenness which we are accustomed to expect in deaths from chloroform.

I should like to learn:

1. When possible, the sex and age of the patient, the character of the operation, and the condition of the patient immediately preceding dissolution.

2. The approximate number of patients to whom the anesthetist had previously administered this combination without mortality.

Sufficient data for identification should accompany each report so that there may be no duplication of cases. Names of reporters will not be published without their consent. Facts are wanted, not theories.

J. F. BALDWIN, M.D., Columbus, Ohio.

DISINFECTION OF MILK PANS AND BOTTLES

To the Editor:—Please give me your opinion regarding the use of a solution of hypochlorites for disinfecting the milk cans and bottles in dairies. There is some opposition here to the ruling preventing the use of this substance. X. Y. Z., Georgia.

ANSWER.—There seems no reason to apprehend injury to health from the use of calcium hypochlorite in disinfecting milk bottles and cans. If there are any objections to the practice they would appear to be on the ground of the possibility of production of unpleasant odors or tastes. Probably just as good results in cleansing could be obtained with milk of lime, and on no score could there be objection to the employment of the latter substance, which is sometimes used successfully in the treatment of pasteurizing plants after contamination with some slime-producing or other objectionable organisms.

THE HARRISON ANTINARCOTIC LAW

To the Editor:—Under the Harrison law, if a doctor owns a drug store and is a registered pharmacist and has his office in connection with the drug store, does one license cover him as a pharmacist and a physician? E. G. B.

ANSWER.—No. Paragraph 2, Article 1, of the Regulations reads, "If the applicant . . . is engaged in more than one profession or business where any of the drugs above described are made, stored or dispensed, a separate application for registry must be made and a separate tax must be paid in each such case."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 6-7. Sec., Dr. John Wix Thomas, Phoenix.
CALIFORNIA: San Francisco, April 13-16. Sec., Dr. Charles B. Pinkham, State Capitol, Sacramento.
COLORADO: Denver, April 6. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, April 13-15. Sec., Dr. George C. Ober, 125 B St., S. E.
IDAHO: Lewiston, April 6. Sec., Dr. John F. Schmershall, Jerome.
MINNESOTA: Minneapolis, April 6-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.
MISSOURI: St. Louis, March 22-24. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.
MONTANA: Helena, April 5. Sec., Dr. William C. Riddell, Helena.
RHODE ISLAND: Providence, April 1-2. Sec., Dr. Gardner T. Swarts, 315 State House, Providence.
UTAH: Salt Lake City, April 5-6. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.
WEST VIRGINIA: Charleston, April 13. Sec., Dr. S. L. Jepson, 81 12th St., Wheeling.

Arkansas November Report

Dr. W. S. Stewart, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, Nov. 10-11, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 21, of whom 15 passed and 6 failed. Thirteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1908)	84.7
University of Arkansas	(1912) 75.1; (1913) 80.8;	(1914) 81.8
University of Colorado	(1914)	88
Howard University	(1914)	88.4
Northwestern University	(1914)	92.1
Barnes Medical College	(1899)	75
Long Island College Hospital	(1878)	75
Jefferson Medical College	(1880)	75
Meharry Medical College	(1914)	75.3
Memphis Hospital Medical College	(1905)	82
University of Nashville	(1907)	78
University of Tennessee	(1914)	89.5
Vanderbilt University	(1914)	87.1

FAILED

College of Physicians and Surgeons, Little Rock	(1910)	42.8
University of Arkansas	(1913) 70;	(1914) 68.7
University of Louisville	(1909)	64.2
Memphis Hospital Medical College	(1913)	62
University of Tennessee	(1912)	*

* Did not complete the examination.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1910)	Illinois
College of Physicians and Surgeons, Chicago	(1907)	Illinois
Indiana University	(1912) (1913)	Indiana
University of Louisville	(1907)	Kentucky
Tulane University of Louisiana	(1906) (1913)	Louisiana; (1913) Mississippi.
St. Louis University	(1910)	Illinois
Chattanooga Medical College	(1906)	Oklahoma
Memphis Hospital Medical College	(1893) Kentucky; (1895) (1912)	Oklahoma.

The following questions were asked:

CHEMISTRY

1. Define an atom, a molecule, and an element. 2. Define an acid, a base, and a salt, with an example of each. 3. Give the composition of the atmosphere. 4. Give the composition of cow's milk. How does it differ from human milk? 5. Give formulae for baking soda and common salt. What effect has each on digestion? 6. What is alcohol? Give its medicinal value. 7. What are carbohydrates? 8. What is strychnin? Its dose? Test? Antidote? 9. Give test for (*a*) indican, (*b*) blood, (*c*) pus in urine. 10. Give treatment for poisoning by lunar caustic and caustic potash.

ANATOMY

1. Name the bones of the lower extremity. 2. Describe the patella. 3. Give origin, insertion, action, nerve and blood supply of the soleus muscle. 4. Name the branches of the external carotid artery. 5. Give the contents of the popliteal space. 6. Describe the knee-joint. 7. Name and locate the valves of the heart. 8. In Pott's fracture, what

bones are involved? 9. What structures pass through the foramen magnum? 10. What structures are divided in amputation at the middle of the leg?

THEORY AND PRACTICE OF MEDICINE

1. What are the essentials of a proper treatment of disease? 2. Describe the various râles, giving the significance of each. 3. Describe aortic and mitral regurgitant murmurs, and differentiate between each. 4. Give the differential diagnosis of acute bronchitis, influenza and bronchopneumonia. Give etiology, diagnosis and pathology of infantile spinal paralysis. 6. Differentiate between hysteria and neurasthenia. Give treatment of the latter. 7. Give etiology, diagnosis and treatment of rheumatic fever. 8. Give etiology, pathology and treatment of enterocolitis. 9. Give the morbid anatomy and treatment of myxedema. 10. Give treatment of scarlet fever and its complications.

PHYSIOLOGY

1. Give the chief functions of epithelial tissue. Give the chief functions of connective tissue. 2. What are the enzymes? Give their chemical composition. 3. Classify white blood corpuscles and the percentage of each found in the blood. 4. What is the object of the circulation of the blood? 5. Name the four excretory organs of the body and their functions. 6. Classify foods. 7. Define afferent nerve. Define efferent nerve. Give classification of each. 8. What are the functions of the medulla oblongata? 9. Give the function and the value of the lymphatic system. 10. Under what conditions does albumin appear in the urine?

BACTERIOLOGY

1. Define the following: bacteria, pathogenic, saprophytes, and phagocytes. 2. Give classification of bacteria, and an example of each. 3. Name the different modes by which bacteria propagate. 4. Give Koch's law. 5. Describe a tubercle bacilli, and give technic of staining same. 6. Name the various kinds of bacteria that are commonly found in tonsillitis with mixed infection. 7. Name and describe the organisms producing the following diseases: syphilis, pneumonia, diphtheria, anthrax and epidemic cerebrospinal meningitis. 8. What are aerobic and anaerobic bacteria? Give example of each class. 9. For what purpose is more than one stain used on a specimen? 10. What is the principal cause of difference in virulence of infectious diseases?

THERAPEUTICS

1. What conditions affect the dosage of medicines? 2. Compare the therapeutic values of the following preparations and state the indications for the use of each preparation: morphine sulphate, codein sulphate and deodorized opium. 3. What precautions should be observed in administering medicines by the hypodermic method? 4. Differentiate between antagonist and antidote. 5. How would you remove stains of iodin, potassium permanganate and argenta nitrate? 6. Has chloroform therapeutic uses other than as an anesthetic? If so, name them. 7. What is an irritant? What is a counter-irritant? Give an example of each. 8. Give therapeutic uses of phenol. 9. What remedies would you use to relieve the dyspnea due to cardiac asthma? 10. Why do we use diuretics in cardiac feebleness?

HYGIENE

1. What instructions and precautions would you give a patient suffering from pulmonary tuberculosis to avoid spreading the disease? 2. What instructions would you give to a nurse attending a diphtheria patient. 3. What is the significance of colon bacilli in drinking water? 4. What are the dangers to be apprehended in milk as ordinarily found in the market? 5. Name the most easily digested meats. 6. What insects convey micro-organisms and disseminate disease? 7. What effect does excessive exercise have on the heart? What effect does insufficient exercise have on the heart? 8. Give the prophylaxis of uncinariasis. 9. How is the contagion of epidemic cerebrospinal meningitis spread? What are the most effective means of stamping out the disease? 10. Name the most common cause of blindness in childhood and the best means to prevent it.

MATERIA MEDICA

1. (a) What countries furnish our gum arabic? (b) Give the official preparations of gum arabic. (c) Give its properties. 2. (a) What is the dose of powdered opium? (b) How much opium is there in the following preparations: pulvis ipecacuanhae et opii, grs. xv.; tincture opii, m. xx., and tinctura opii camphorata, drs. 1? 3. Give the physiologic action and dosage of ammonium chlorid. 4. (a) What is the common name of antimonii et potassi tartras? (b) Give its physiologic action. 5. Give the physiologic action of zinc oxid. 6. (a) What is the source of antipyrin? (b) Give its physiologic action. 7. What is incompatibility in medicine and what are the different kinds of incompatibility? 8. (a) What is the source of hydrastis canadensis? (b) Name its alkaloids. 9. Give the composition of lotio hydrargyri nigra, Tully's powder, hydrargyri iodidum rubrum, and liquor arsenii et hydrargyri iodidi. 10. (a) Name the official salts of bismuth. (b) Give their physiologic action.

GYNECOLOGY

1. State in detail method to be used in making examination of female generative organs. 2. Give etiology, symptoms and treatment of prolapse of the uterus. Also, give cause, symptoms and treatment of subinvolution of uterus. 3. Define rectovaginal fistula, and give treatment. 4. Name some of the more frequent causes of acute cystitis in the female and give treatment. 5. What is acute parametritis? Give treatment. 6. Name different varieties of uterine fibroids. Give symptoms and physical signs of each kind. Also state some other pathologic conditions that may develop on either variety. 7. What diseases may be mistaken for uterine-cervical cancer, and how would you make differential diagnosis? 8. What conditions may develop in the course of acute Neisser infection in the female that would be grave? How would you treat any one of these you may select? 9. Define pan-hysterectomy. State some of the conditions in which you would elect this procedure. Also state how you would prepare a patient for this operation. 10. Discuss fully ectopic pregnancy, and outline treatment.

SURGERY

1. Name in order of their virulence the bacteria of suppuration. 2. What is the difference between an acute abscess and a purulent infiltration? 3. Give the pathology and symptoms of the initial, the secondary, and the tertiary stage of syphilis. 4. Describe intravenous saline transfusion and give dangers of the operation. 5. Give definition of acute osteomyelitis, pathology, symptomatology and differential diagnosis between it and acute rheumatism. 6. Differentiate between trachoma and conjunctivitis. Give prognosis and treatment for trachoma. 7. State the avenues and possible points of metastasis of a malignant growth of the breast. On what symptoms may an early diagnosis of cancer of the breast be based? 8. In fracture of the upper third of the femur, what is the usual position of the fragments? What muscular action causes the same? In what position would you dress it, and why? 9. Under what conditions may a wound be closed without drainage? 10. Describe rodent ulcer. Name the structure in which rodent ulcer mostly develops, and give surgical treatment.

PATHOLOGY

1. Explain what influence short and prolonged hot and cold baths have on the blood. 2. What are crenated blood cells? 3. (a) Detail method of ascertaining, and what is the normal blood pressure? (b) What is the pathologic significance of a persistent high or low blood pressure? 4. What special cell would you find markedly in excess in spinal or pleural fluids of patients with tubercular or syphilitic infection? 5. (a) Name the various kinds of leukocytes. (b) Give the significance of a marked eosinophilia. 6. In examining urinary specimens, how would you differentiate renal cells from cells from the ureter or urethra? 7. (a) State which is the most reliable method of investigating the composition of gastric fluids. (b) Give technic and special diagnostic value of same. 8. Give the pathogenesis of rheumatism. 9. (a) What is the significance of acetone and indicanuria. (b) Give tests for each. 10. Name the remote pathologic conditions that may result from gonococcus infection in the male and female.

OBSTETRICS

1. Give the hygienic management of pregnancy, including diet, clothing, exercise, care of skin, kidneys, alimentary tract and breasts. 2. Give in detail how you would manage each stage of normal labor. State how you would prepare the patient and your own preparation. 3. Describe fully how the puerperium should be managed. 4. Give the different steps in the mechanism of labor in a left occipito-anterior position, and state in detail how you would apply forceps in a case of left occipito-anterior position, with vertex impaction in inferior strait. 5. Name the accidents which may occur to the mother in labor. Take any two and state treatment. 6. Give your management of a case of inevitable abortion at tenth week of gestation. 7. Name some of the more frequent diseases to which pregnancy predisposes. Take any two of them and state how you would instruct patient that she might avoid their development. 8. Give the premonitory symptoms of an attack of eclampsia. Describe an attack in detail and give treatment. 9. What are the indications for Porro cesarean section? Give detail steps of the operation. 10. State how you would manage the new-born child. What are the causes of still-birth, and what are the causes of asphyxia neonatorum? Give your method of treatment of the latter condition.

Ohio December Report

Dr. George H. Matson, secretary of the Ohio State Medical Board, reports the oral, practical and written examination held at Columbus, Dec. 8-10, 1914. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 32, of whom 31 passed and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1913)	83.9
Northwestern University	(1914)	84.7, 85.3
College of Physicians and Surgeons, Baltimore	(1914)	82.9
University of Maryland	(1914)	88.5
Columbia University, College of Physicians and Surg.	(1914)	87.2
Syracuse University	(1912)	84.2
University and Bellevue Hosp. Med. College	(1914)	84.9
Cleveland-Pulte Medical College	(1913)	80.9
Eclectic Medical College, Cincinnati	(1914)	75, 78.5, 79.7, 80.7, 81.5, 85.
Starling-Ohio Medical College	(1914)	75, 75, 77, 78.1, 79.2, 81.2.
Western Reserve University	(1914)	78.4, 80.1, 83.6, 85.9.
Jefferson Medical College	(1914)	81.4, 88.8
Medico-Chirurgical College of Philadelphia	(1914)	84
University of Pennsylvania	(1914)	85.1, 88.9
University of Vermont	(1914)	77.7
FAILED		
Chicago College of Medicine and Surgery	(1913)	72.6

Book Notices

HANDBOOK OF PHARMACOLOGY. By Charles Wilson Greene, A.B., A.M., Ph.D., Professor of Physiology and Pharmacology, University of Missouri. Cloth. Price, $3.50 net. Pp. 396, with 70 illustrations. New York: William Wood & Co., 1914.

The advance of biology and the development of medical pedagogy have gradually separated pharmacology as a representative of pure science from therapeutics, which represents an application of science to the cure of disease. Therapeutics must be based largely on pharmacology, but its conclusions must be largely indirect, because while pharmacology deals with the normal organism, therapeutics is applied to an abnormal organism which may react to the therapeutic agent in a manner different from the behavior of the normal organism. Further, pharmacology draws its facts almost wholly from animal experimentation, and hence arrives at the action of drugs on the human organism mainly by inference. In approaching the consideration of a book devoted to pharmacology, we must bear in mind that the scientific treatment of the subject demands that therapeutic inferences be subsidiary. Most teachers of the subject still aim to connect pharmacology with medicine, and most text-books have conserved their utility to practicing physicians by adding paragraphs or chapters on therapeutics. This has not always been entirely satisfactory, for there is seldom a clear statement of the exact indications of a remedy as compared with similar remedies, or of the phase of the disease in which the individual remedy is most useful. The more pharmacology is taught by full-time teachers as a laboratory subject, the more necessary will be its divorce from the teaching of therapeutics. In the first place, the students to whom it is taught have seldom that foundation in pathology and symptomatology which fits them for the study of the art of therapeutics. Even the practitioner often feels the want of definiteness and adaptation to the condition of the living patient in the therapeutic suggestions made in these text-books. Greene's Handbook attempts to conform to the distinction outlined above, and presents only matter suitable for the instruction of students in the principles of pharmacology. It is strictly a text-book for the student, and is not adapted to the needs of the practitioner unless he wishes to pursue pharmacology as a science. The idea of the book is to give attention to the action of drugs from the laboratory point of view, leaving to clinicians that part of the subject which deals with the clinical use of drugs. Thus a sharp distinction between these two phases of the subject is attempted. Drugs are classified partly according to chemical relations. Two great divisions are recognized: organic drugs and inorganic drugs. Subsidiary groups among organic drugs are formed according to some prominent action, such as depression or stimulation. The inorganic drugs are divided almost entirely on chemical lines. This book, like most text-books on pharmacology, devotes too little attention to the more general theoretical side of the subject; that is, to such matters as irritability, stimulation, depression, the mode of action of drugs, etc. These are the essence of pharmacology. By a thorough grounding in these fundamentals, the student may be expected to gain clearer ideas of the way in which he is to influence the organism in disease. In such respects also the human organism agrees more fully with the lower animals, so that inferences of similar actions are justified to a greater extent.

FOCAL SYMPTOMS IN GENERAL PARALYSIS. By C. Macfie Campbell, M.D., B.Sc., Associate Professor of Psychiatry, Johns Hopkins University, Baltimore. Paper. Price, $1.25 net. Pp. 138, with 10 illustrations. New York: G. E. Stechert & Co., 1914.

This study, first presented as a thesis to the University of Edinburgh for the degree of M.D., in July, 1911, contains much valuable material and deserves to appear as a separate brochure. After giving a brief historical summary of the subject of general paresis, and paying due attention to the histopathologic researches of Nissl and Alzheimer, as well as to the introduction of the cytologic examination of the cerebrospinal fluid, the author concludes that the diagnosis of general paresis must be made only after careful macroscopic and microscopic examination according to the most modern methods. Accordingly, he makes use of nineteen cases thus studied and classifies them in four groups. In Group 1 he places cases of general paralysis with focal symptoms on the basis of vascular disorder. Group 2 treats of the cases of general paralysis with focal symptoms on the basis of localized severity of the process of general paralysis: Lissauer's atypical general paralysis. Group 3 contains the cases of general paralysis with focal symptoms of traumatic origin. Group 4 includes the cases of general paralysis with focal symptoms which are correlated neither with vascular disorders nor with localized severity of the process of general paralysis. Because of the diagnostic difficulties which the atypical cases of general paralysis present, among which must be included the large number of cases of general paralysis with focal symptoms, the latter group deserves intensive study, not only from the point of view of differential diagnosis, but also for the light which it throws on the evolution of the disease. While the author reaches no definite conclusions, his thesis is worth while perusing, as the case histories are given a large space and an attempt is made to correlate these with the pathologic findings according to modern methods of investigation.

THE BRAIN IN HEALTH AND DISEASE. By Joseph Shaw Bolton, M.D., D.Sc., F.R.C.P., Professor of Mental Diseases, University of Leeds. Cloth. Price, $5 net. Pp. 479, with 99 illustrations. New York: Longmans, Green & Co., 1914.

This work is practically a collection of papers loosely bound together by more or less discursive and some polemic discussion. The papers are so loosely bound in places that extensive verbatim repetitions occur. The work is divided into two parts. The first, which deals with cerebral function in the normal brain, is the result of laborious and careful studies. It calls attention to a field of research but little explored, and makes accessible much valuable data on the micrometry of the cerebral cortex. The rest of the work consists of a short general review of psychology and over 300 pages devoted to cerebral function in mental disease. The author divides practically all mental diseases into amentia, or deficient neuronic development, and dementia, or neuronic degeneration. The further classification of these two groups is cumbersome and confusing, and is a decided step backward in an already unsatisfactory chapter in psychiatry. The portion of the work devoted to psychology, especially that treating of emotion, is not beyond criticism. The morbid anatomy of mental diseases, in the light of recent research, is poorly dealt with; the symptomatology of mental diseases is somewhat rambling and does not tend to make his classification convincing. The book has the value of a pile of reprints of articles by an active, earnest and thoughtful worker; a value which can be accurately determined only by one already familiar with the subject treated.

THE HEART IN EARLY LIFE. By G. A. Sutherland, M.D., F.R.C.P., Senior Physician to the Hampstead and North-West London Hospital. Cloth. Price, $2. Pp. 207. New York: Oxford University Press, 1914.

The book is divided into three sections: cardiac disturbances (functional); borderland between functional disturbances and organic disease of the heart, and organic heart disease. Many of the current views about disturbances and diseases of the heart in childhood and youth are founded on inductions and inferences; but the signs, symptoms, prognosis and treatment are often different from those in later life. Under the various sections the various disturbances and diseases of the heart in early life are discussed, accompanied by case reports, polygraphic tracings and often also the electrocardiogram. The author, being a pupil of Mackenzie, recommends the polygraphic method as the simplest and most exact method of studying the heart. The pathology of the heart is somewhat neglected, and no mention is made of experimental endocarditis as produced by Rosenau. The book is up to date, and the tracings are good and warrant the attention of the pediatrician.

Miscellany

The Treatment of Drug Addictions

The Harrison antinarcotic law, which became effective March 1, deprived many addicts of their drug and has caused much suffering. Numerous methods have been devised to wean the patient from the drug habit.

THE LAMBERT-TOWNS METHOD

The Lambert (sometimes referred to as the Lambert-Towns) method of elimination and rapid withdrawal has proved quite satisfactory. This method has been described by Dr. Alexander Lambert, in THE JOURNAL, but in view of the numerous recent inquiries in regard to it, the essential details are here repeated. This must not be regarded as a cure for drug habits, but is intended to obliterate the terrible craving which these patients suffer when deprived of their accustomed drug. Vigorous elimination is the most important feature of the method, and is secured by the administration of compound cathartic pills and blue mass or some other form of mercury. The other essential measure is the persistent use of the following belladonna mixture:

℞		Gm. or c.c.
	Tincturae belladonnae (15%)	62
	Fluidextracti xanthoxyli	
	Fluidextracti hyoscami, āā	31

With these two prescriptions as a basis the following steps in the treatment are to be observed:

A patient addicted to morphin is given five compound cathartic pills and 5 grains of blue mass. Six hours later, if the bowels have not moved, a saline is given. After three or four abundant movements of the bowels (and not until then) the patient is given by mouth or hypodermically, depending on his habitual method of taking the narcotic, in three divided doses, at half-hour intervals, two-thirds or three-fourths of the total daily twenty-four-hour dose of morphin or opium to which he has been accustomed. Observe the patient closely after the second dose, when about half the total twenty-four-hour dose has been taken. A few patients cannot comfortably take more than this amount. Six drops of the belladonna mixture dropped with a medicine dropper are given in capsules at the same time as the morphin or opium, and should be repeated every hour for six hours. At the end of six hours the dose of the mixture is increased 2 drops. This dose is then continued at hour intervals for another six hours, when the dose is increased by 2 drops, and again continued at the same interval, increasing the dose each six hours until it reaches 16 drops. It is then continued in this amount, but is diminished or discontinued at any time if the patient shows belladonna symptoms such as dilated pupils, dry throat or redness of the skin, or mental symptoms. It is begun again at reduced dosage after these symptoms have subsided. Unusual sensitiveness to belladonna will usually be manifest in six or eight hours, when the dose can be cut down 2 to 4 drops and then raised by 1 drop every six hours. On the other hand if after twelve hours the 16 drops have not produced dryness of the throat the dose may be increased to 18 or 20 drops every hour until the dryness occurs, and then the amount may be reduced.

At the tenth hour after the initial dose of morphin five compound cathartic pills and 5 grains of blue mass should again be given. If they have not acted in six or eight hours, give some vigorous saline. When the bowels have acted vigorously, which is usually at about the eighteenth hour, give half the original dose of morphin; that is, one-half or three-eighths of the original total daily dose. The belladonna mixture is still continued, and ten hours after the second dose of morphin, five compound cathartic pills and 5 grains of blue mass are again given, if necessary followed by a saline seven or eight hours later. After the bowels have acted thoroughly, at about the thirty-sixth hour, the third dose of morphin is given, which should be one-sixth or three-sixteenths of the original dose. This is usually the last dose of morphin. Ten hours after the third dose of morphin, the forty-sixth hour, again give the five compound cathartic pills and 5 grains of blue mass, followed seven or eight hours later by a saline. After the bowels have moved thoroughly a bilious green stool should be expected and after its appearance 2 ounces of castor oil should be given to clear out thoroughly the intestinal tract. It is sometimes found necessary to continue the belladonna mixture over one or two additional cathartic periods before giving the oil. After giving the last dose of compound cathartic pills, and before giving the oil, the patients will have their most uncomfortable time, and may be relieved by 5 grains of codein hypodermically. This should not be kept up long after the oil is given. Beginning about the thirtieth hour the patients should be given strychnin or digitalis or both every four to six hours.

Withdrawal pains can sometimes be relieved by ergot and strychnin, by massage, sodium salicylate or by some salicylic compound combined with coal tar products such as antipyrin, acetphenetidin or pyramidon. Indiscretions in eating or exercise two or three days after stopping the drug may cause a recurrence of the withdrawal pains, due to exhaustion or indigestion. This trouble will quickly disappear without narcotics.

Insomnia may be troublesome and may be treated by bromids, chloral or other hypnotic. Lambert's experience is that veronal acts badly in these cases. Muscular fatigue is the best hypnotic, and regular exercise may be carefully taken within a week after the discontinuance of the drug. It is important to build up the patients physically.

Morphin and alcohol addicts should be treated for the morphin addiction and the alcohol may be tapered off gradually. The gastritis usually found may cause difficulty in retaining medicines or food. Sodium citrate in doses of 5 to 10 grains every hour will relieve this condition, and if necessary may be supplemented by 10 to 20 grains of cerium oxalate.

Cocain and morphin addiction make a difficult combination to treat, but the procedure should be that for morphin, with plenty of strychnin or other stimulant. The cocain should be withdrawn at once. The patients may become delirious and unmanageable after the effect of the morphin wears off.

The cocainist should be treated like the alcoholic, by withdrawing the cocain, giving the belladonna mixture every hour, increasing as with the morphin patients, and the five compound cathartic pills and 5 grains of blue mass, the first doses being taken simultaneously. At the end of the twelfth hour repeat the cathartics and the saline, and likewise at the twenty-fourth and thirty-sixth hours. After the last cathartic the bilious stools will appear, and at the forty-fourth or forty-fifth hour the castor oil is given. Unless the bilious stools appear it may be necessary to continue the treatment over one or two more cathartic periods.

Though each patient presents an individual problem, Lambert insists that the plan must be adhered to closely. The cholagogue action of the mercury is essential and the persistent repetition of the doses of the belladonna mixture so as to produce the physiologic effect is required to prevent the craving for the drug.

PETTEY'S METHOD

The method of Pettey in morphin addiction also employs active purgation as one of its principal features, with sedation in the form of scopolamin after the drug is withdrawn, with large doses of strychnin in the purgative to increase peristalsis and also afterward for its supporting effect. The steps in the treatment may be described as follows:

On the day treatment is begun the patient may take his usual doses of the drug. He is required to abstain from dinner and supper, and at 4, 6, 8 and 10 p. m., he is given the following purgative prescription divided into four capsules:

℞		
	Calomel	
	Powdered Extract Cascara Sagrada āā	gr. x
	Ipecac	gr. i
	Strychnin nitrate	gr. 1/4
	Atropin sulphate	gr. 1/50

No opiate and no nourishment are to be given the following morning until the bowels have moved thoroughly. In order to insure the movement of the bowels, six or eight hours after giving the last purgative capsule, 1/20 grain of strychnin should be given hypodermically and a half hour later 2 ounces of castor oil or a bottle of citrate of magnesia. Both the strychnin and the oil or saline should be repeated every two hours until the intestinal canal has been thoroughly emptied, and no morphin should be given during this time. The thorough elimination will afford relief from the discomfort of abstinence from the drug and this should be taken advantage of to postpone the morning dose of the narcotic. When the demand for the drug becomes insistent it may be given in not more than one-half or two-thirds the usual dose at the same intervals at which the drug was formerly taken. After the purgation liberal feeding may be allowed until within six or eight hours before the next purgative course. This should be forty-eight hours from the beginning of the first purgative course, and may be more or less active, according to the effect obtained from the first, but none of the purgative ingredients should be left out, and large doses of strychnin are insisted on. The morphin in reduced dose, sufficient to keep the patient comfortable, may be continued until the last dose of the second purgative course, when the drug is to be discontinued and no other opiate should be given. Six or eight hours after the second purgative course has been completed, strychnin hypodermically and the oil or saline should be repeated as after the first course, until free bowel movements occur. The patient will now be able to go longer before feeling the effect of abstinence from his morning dose, especially if he remains in bed, which he should do. Within six or eight hours after the time for the morning dose the patient's demand for relief from discomfort should be met by giving, instead of the opiate, 1/200 grain scopolamin hypodermically, and this should be repeated in thirty minutes. If the patient has not fallen asleep after the second dose a third may be given in a half hour or hour, which may be of the same size or double the previous dose, depending on the effect. This will produce either sleep or mild intoxication, in either of which conditions the patient will not suffer. Immediately he awakes another dose of scopolamin, 1/200 grain, should be given, and repeated to keep up a mild belladonna intoxication and to maintain the patient free from pain. This impression from the scopolamin should be kept up for thirty-six to forty-eight hours after beginning it, and then should be discontinued. During the scopolamin period and for twenty-four hours afterward, 20-grain doses of sodium hyposulphite may be given every two hours, which will supplement the effect of the calomel purgative and the patient will have small, bilious stools, unattended by colic or griping.

Convalescence will be reached on the fifth or sixth day and no further medication is indicated as far as the addiction is concerned and the patient will be comfortable. Deficient heart action during or after treatment may be treated by spartein sulphate in doses of 2 grains every four to six hours.

JENNINGS' TREATMENT

The treatment of Oscar Jennings consists in giving dionin in place of the morphin, accompanied by spartein sulphate, the doses of dionin being rapidly reduced as conditions warrant. Hygienic measures and good feeding are also employed with vichy, stimulants, cola and other drugs to meet indications. He lays stress on the reeducation of the patient in self-control.

THE METHOD OF SCELETH

This method was described first in THE JOURNAL last week, March 13, 1915, p. 927.

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Medicolegal

Physician Entitled to Recover from Third Party for Services

(Hertel vs. Cuba (Mo.), 171 S. W. R. 565)

The St. Louis Court of Appeals of Missouri affirms a judgment in favor of the plaintiff, who commenced an action against the defendant, before a justice of the peace, filing a written statement in which it was set out that the defendant was indebted to the plaintiff in the sum of $125 for medical services rendered by the plaintiff to one Langford, from June 2, 1910, until on or about Sept. 3, 1910, "at the special instance and request of the defendant," and that the services so rendered by the plaintiff were reasonably worth the sum of $125. Alleging demand and refusal to pay, the plaintiff asked judgment for that amount and costs. The court says that it does not think the point well taken that the petition did not state facts sufficient to constitute a cause of action against the defendant. It was argued that the petition or statement did not contain an averment of an express promise to pay, but rested on an implied contract, and that neither had been proven. But it was admitted that the statement set out facts on which an implied promise might arise, and there was evidence not only tending to sustain this but also evidence tending to show the services were rendered under an express promise by the defendant, made before their rendition, that he would pay the plaintiff for them. Over and above that, even if this statement was defective, it was not so fatally defective that it would not sustain a judgment, and it was entirely sufficient after judgment. Nor was there error in the exclusion of a statement filed with an insurance company by Langford, in which, after setting forth the facts of the accident as far as he knew them, he stated that he thought he was entitled to his lost wages and doctor's bills, and that he "makes claim for $500." To this he added: "My doctor's bills amount to $150." There was no evidence whatever that this statement was brought to the knowledge of the plaintiff, so it was inadmissible against him for any purpose whatever. So, too, it may be said of evidence attempted to be introduced to the effect that Langford had in point of fact been paid by the insurance company for his doctor's bills, there being no pretense that the plaintiff had been paid by any one for his services rendered in attendance on Langford. Again, it was in evidence that there was some discussion between the defendant and the wife of the injured man, Langford, as to the insurance company being liable for "first aid" services, but there was not a particle of evidence bringing knowledge of this home to the plaintiff, while there was affirmative evidence of an employment of the plaintiff by the defendant at the outset, and a promise on the part of the defendant to pay for the services so rendered, which did not make a case for an instruction limiting the plaintiff's recovery to a reasonable sum for the first or emergency treatment if the defendant agreed to pay no more.

Concealment of Tuberculosis Ground for Annulment of Marriage

(Sobol vs. Sobol (N. Y.), 150 N. Y. Supp. 248)

The Supreme Court of New York, Special Term, New York County, holds that the fraudulent concealment of tuberculosis by a person entering into the marriage relation is ground for the annulment of the marriage. The court says that no case was brought to its attention, nor was it able to find any, which directly determined the question as to the facts in this case being sufficient to move the court to grant a decree. It was established that the defendant was treated for tuberculosis prior to the time of his marriage and knew that he was suffering from the disease. Subsequently he was married to the plaintiff, and she testified that he represented to her prior to the marriage that certain symptoms which he displayed were the manifestations of a cold. It furthermore appeared that within a few days subsequent to the marriage the defendant's condition was such as to require the attention of a physician, who then diagnosed his case as tuberculosis, and that thereafter the plaintiff no longer continued to cohabit with him. There were no children of the marriage. After the marriage the defendant continued to show symptoms of tuberculous trouble, and on the advice of his physician went West for the purpose, if possible, of becoming cured, although the physician testified that in his opinion the defendant was incurable. The plaintiff said that had she known of the actual facts of his condition they would have precluded her from entering into the marriage. The court thinks that there was a misrepresentation of a fact of sufficient weight for the courts, from the standpoint of public policy, not only because of its possible effect on one of the contracting parties, but also on their posterity, to declare the contract void.

In numerous cases the courts of New York and other states have held that the fraudulent concealment of a venereal disease is sufficient ground for the annulment of the contract of marriage on the ground of fraud. The view which the courts have adopted is that the presence of such a disease is not only liable to cause contagion from the marital relation, but is also fraught with danger to the offspring of such union, and is a disease involving disgrace in its contraction and presence. Tuberculosis is not a disease which so closely affects the marriage relation as a venereal disease. If, however, it is such a disease that, through the close tie of the marital relation, grave and disastrous results from infection may be caused to the other party, and possible evil consequences to the offspring, it is sufficiently grave to bring it within the purview of the rule applicable to venereal disease.

The court deems it proper for it, in view of the widespread prevalence of tuberculosis and the disastrous consequences to those who suffer from it, to take judicial notice of its characteristics for the purposes of this discussion. There can be no doubt that it is a disease of an infectious character, and that close association with a person afflicted with it, unless attended by great care, occasions danger of infection to those coming into close contact with such person. While it may be that such care is possible in the marital relation, nevertheless the court does not think it should be the policy of courts to sustain the obligations of a union which would entail the burden and danger that would follow under the circumstances, and where there can be no sure method of preventing an infection. Furthermore, there is little doubt that the offspring of a person afflicted with tuberculosis, while not born infected, are born with a strong predisposition to becoming infected, and succumb with greater readiness to its ravages.

Society Proceedings

COMING MEETINGS

American Medical Association, San Francisco, June 21-25.

Alabama State Medical Association, Birmingham, Apr. 20-23.
American Association of Immunologists, Washington, May 10.
Amer. Assn. of Pathologists and Bacteriologists, St. Louis, Apr. 2-3.
American Gastro-Enterological Association, Baltimore, May 10-11.
American Medico-Psychological Assn., Fortress Monroe, Va., May 11-14.
American Neurological Association, New York City, May 6-8.
American Orthopedic Association, Detroit, May 6-8.
American Urological Association, Baltimore, April 13-14.
Arkansas Medical Society, Little Rock, May 3-6.
Association of American Physicians, Washington, May 11-12.
Conf. of State and Prov. Boards of North America, Washington, May 14.
Florida Medical Association, De Land, May 12-14.
Georgia Medical Association, Macon, April 21-23.
Iowa State Medical Society, Waterloo, May 12-14.
Kansas Medical Society, Kansas City, May 5-6.
Louisiana State Medical Society, Lake Charles, April 20-22.
Maryland Medical and Chir. Faculty, Baltimore, April 27-29.
Medical Society of the Missouri Valley, Omaha, March 25-26.
Mississippi State Med. Association, Hattiesburg, May 11.
Missouri State Medical Association, St. Joseph, May 10-12.
Nat'l Assn. for the Study of Epilepsy, Old Point Comfort, Va., May 10.
New York State Medical Society, Buffalo, April 27-29.
North Dakota State Medical Association, Bismarck, May 12-13.
Ohio State Medical Association, Cincinnati, May 4-6.
Oklahoma State Medical Association, Bartlesville, May 11-13.
South Carolina Medical Association, Greenwood, April 20-22.
Tennessee State Medical Association, Nashville, April 13-15.
Texas State Medical Association, Ft. Worth, May 4-6.
West Virginia State Medical Association, Huntington, May 12-14.

ASSOCIATION OF AMERICAL MEDICAL COLLEGES

Twenty-Fifth Annual Meeting, held Jointly with the Federation of State Medical Boards, Chicago, Feb. 17, 1915

The President of the Association, DR. ISADORE DYER, New Orleans, in the Chair

A list of the officers elected was published in THE JOURNAL, Feb. 27, 1915, p. 754.

Executive Business

The Committee on Medical Research was instructed to place its services at the disposal of the Committee on the Defense of Medical Research of the American Medical Association, and work in cooperation with that committee.

The University of Tennessee, College of Medicine, Memphis, was admitted to membership.

A representative was appointed to serve on a joint committee with the Council on Medical Education of the American Medical Association for the purpose of collaborating with Mr. Kendric C. Babcock, formerly specialist in higher education of the United States Bureau of Education, in formulating a detailed report setting forth the best methods of administering the entrance requirements of medical schools, and the adjustment of such requirements to existing conditions.

The Medical Career: Address of President

DR. ISADORE DYER, New Orleans: In methods of teaching and equipment, all colleges have materially improved. The scientific development of all of the component departments of the schedule has necessitated better teachers, with special training in many branches needing more attention. The result is now evident. The college course is so crowded that there is not sufficient time to satisfy the various departments. More time will soon be needed. The plan or scope of the education necessary to qualify the intending practitioner in medicine is still undetermined. The cultural advantage of previous college training is generally conceded and the student who has finished a college course will derive most from his medical course. Are we satisfying our obligations, however, in making standards for the exceptional instead of for the average student? In the discussion of standards, the demand has usually been for better and higher training; the student has seldom been discussed. Formerly, the reasons for engaging in the study of medicine were mainly through an inspiration to follow medicine because of its traditions, although medicine has never suffered from such students. Formerly, about 40 per cent. of the graduates in medicine quit within a few years after leaving the medical school. To-day higher requirements make the intending medical student weigh more carefully the question of his calling. No one of the professional careers offers a harder road, or is attended with a greater outlay in time and in money than that of medicine. Even when the student is through he may see the need of more experience before he accepts the responsibility of his profession. The practice of medicine brings in slow return, depending on location and opportunity. The exceptional physician may grow well-to-do through fortunate investment, but outside the larger cities few get rich. For scientific interest the field in medicine is large, and the reward comes in achievement, but the compensation otherwise is negligible. Problems develop for laboratory man as well as clinician, and their solution is worth while but not profitable. The lines of least resistance have appeared to be in the specialties, wherein larger fees may be demanded and more or less ignorance disguised in technic.

Efficiency is, after all, the chief purpose in medical education. But when the student has satisfied the required courses, has he had the best medical education? The examination of any student body at any part of the present accepted curriculum finds most of the students rather half baked, and with a corollary complaint from most of the teachers that courses are not long enough to give the student necessary instruction. The so-called special subjects are either neglected, or discounted with the suggestion that the student may take them up after he is graduated; in other words, he may make his education as a doctor complete after he has become a doctor. We are really at the point at which the student and his training should be reconsidered. Our present plan is inclined to make the present graduate a predestined specialist. The curriculum should be broadened so as to prepare the student for general practice, with enough training in special branches to permit the care of ordinary cases. The abandonment of the field of general practice has been a natural outcome of a deficient general training, and the deficiency has resulted from an obvious lack of time in the schedule provided in a four-year course. In any readjustment, the interests of the student should be carefully considered.

Classification of Medical Colleges

This paper, by DR. HENRY S. PRITCHETT, New York, appears in full in THE JOURNAL (p. 961, this issue).

DISCUSSION

DR. N. P. COLWELL, Chicago: The Council on Medical Education has long since learned to differentiate between criticism which was sincere and that which was not. There have been many criticisms, back of which the interests of those making them were evident. There is no question, however, of the sincerity of the criticism made to-day, and that sort the Council always sincerely appreciates.

President Pritchett has expressed a doubt regarding the wisdom of the higher entrance standard in the South. The development of the high schools of that section of the country has been and is one of the most important problems confronting the Southern medical schools. The Council believes the enforcement of the one year of college requirement should not be further delayed, because (1) the Council has fixed a standard for the entire country and has tried to obliterate sectional lines; (2) colleges of the South no longer desire special concessions, but ask to be judged on the same basis as all other colleges; and (3) if the high schools of the South are imperfect, is it not all the more reason why students coming from them should be required to take the one year of extra work, even though it may not be at first as perfect a college year as is desired? Again, the effect of the requirement depends on the manner in which it is enforced. In response to the question, "Would not the requirement of a year of college work, with the strict understanding that it be preceded by a four-year high school education, or its actual equivalent, help the high schools in the South?" the answers from leading educators of the South were decidedly in the affirmative. The chief difficulty even in some of the universities in the South has been the lack of efficient methods of administering entrance requirements. That is a hindrance to progress both in the high schools and in colleges. If the medical schools make sure that students admitted have the four year high school education, before any college work taken may be counted as such, it would be a positive aid in the development of the high schools and would induce the small colleges to require at least fourteen units of secondary school work for admission or not be recognized by the medical schools. The one year requirement is clearly a temporary measure, and the preliminary sciences can better be completed in a two year course.

All of you remember the state of affairs existing before the work of classifying colleges began. President Pritchett says it is much more difficult to differentiate between high grade schools; but that difficulty was not so apparent ten years ago. On the other hand, when all medical schools become high grade it will not be necessary to classify them. When the first inspection was made by the Council during 1906-1907, the inspection in many colleges could easily be made in ten or fifteen minutes. At that time, there were no standards and no one knew what the average condition was. In the second inspection, however, we had a standard based on the average condition in all colleges of the country. That average was far below the ideal, since the conditions of medical education throughout the country were so low. Following the second tour of inspection, however, on the basis of that national average all the medical colleges in all sections of the country were graded. In that classification the medical schools were divided into three groups—A, acceptable, B, doubtful, and C, non-acceptable. It was impossible

at that time to divide the colleges into two groups, of acceptable and non-acceptable, as suggested by President Pritchett. It was necessary to provide a third group for those which were doubtful. This intermediate group contained colleges which had good reason for existence, and it was only right to give them a chance to make the changes needed to bring them into the first group.

As to the standard by which the colleges were measured, although it was not one which could be used satisfactorily to differentiate between the highest grade colleges, it met the needs of the time. No one item could be given, on the basis of which, taken alone, medical schools could be fairly classified. One item of the Council's standard was the record of the examination of the graduates of the various medical colleges by the state licensing boards, and such records were based on figures taken from official reports. Nevertheless, to have classified the colleges on that item alone would have been misleading and inaccurate. For example, numerous instances could be given of low standard medical colleges which, by having all their graduates examined in a single state where the examinations were easy, obtained 100 per cent. of successes, while in the same year Johns Hopkins and other high grade medical schools, which had graduates examined in many states, had a few failures, giving them ratings of from 85 to 95 per cent. Again, no matter how detailed the standard may be, much must be left to the judgment of an experienced inspector. In a certain state, medical colleges are required by the licensing board to possess a certain specified amount of equipment, and one of the medical schools in that state was found to have purchased the apparatus required, but no one was using it for teaching. So, in addition to noting the possession of buildings, laboratories, equipment, library and museum, the inspector must find out to what extent the college is using them in the instruction of medical students. Therefore, unless wisely administered, even the most elaborate and detailed standard of measurement would not result in a reliable classification.

President Pritchett is correct when he says that the standard used is not ideal. It is the best we have, however, and has brought results. Even if the same outline were followed, moreover, I do not believe any educational or inspecting agency could have done the work as effectively as has the Council on Medical Education. Why? Because of the abundance of information constantly being received at the headquarters of the American Medical Association, of which the Council is a permanent committee. The Association publishes a directory, and for that purpose obtains a lot of detailed information regarding all physicians; from the medical colleges information is obtained regarding students and graduates, and from state boards information is obtained regarding examinations showing what physicians have been licensed. In fact, the Council is conducting a clearing house through which a great deal of reliable information is available which cannot be obtained by inspections. Having all that information, the Council is in better position, perhaps, than any other agency to carry on this work effectively.

The strongest point in the Council's position is that it does not possess and has never claimed legal authority. Its power comes from publicity, from telling the truth, so far as it has been enabled to know the truth. It is the power of publicity and not legal force that is doing the work.

The Council knows its ratings have been lenient. The statement has been repeatedly made that if we have erred, it has been on the side of leniency. Each succeeding classification, nevertheless, has been more reliable than its predecessor. The Council has endeavored to avoid extremes. The whole campaign has been constructive, and the standards have been such as would lift up and not force out of existence any deserving schools.

It is true that certain schools in Class A cannot compare with the highest and strongest institutions, such as Harvard and Johns Hopkins. The Council has not expected or attempted to bring all schools on as high a grade as Johns Hopkins or Harvard, but has tried to bring the medical schools in the lower classes up to at least the level of the lowest in Class A.

DR. ARTHUR DEAN BEVAN, Chicago: I agree with President Pritchett on the subject of classifications, which, at most, are temporary expedients. The first classification made by the Council was crude, but productive of much good. It was based on the records of graduates made in state licensing examinations. The second classification was based on a sort of civil service examination of the school on ten points, making a possible hundred. That classification justified itself. The same is true of succeeding classifications. The Class A plus was introduced to indicate the acceptable schools, which, in addition to having complete facilities for teaching medicine, required a year or more of premedical science for admission. This year, inasmuch as eighty-four schools out of about ninety-eight which still exist now require this premedical preparation, the A plus group has automatically eliminated itself. For the present the classification which will secure the best results is the A, B and C classification. The A class includes medical schools which the Council believes are worthy of recognition by the state boards of the country; the C group consists of the non-acceptable schools, and the B group of the doubtful schools.

DR. J. M. BALDY, Philadelphia: In my state we have definite fundamental principles on which we act and every action taken is based on the desire to reach a fixed point, which we have set as our goal. Most of us are practical men. We recognize two forces at work, educators and administrators, and we are inclined to the view that for the time being, administration takes precedence. President Pritchett said that we should have waited for the high schools of the South, and should not have brought pressure to bear on them, but should have exercised patience. We waited so long we got tired of waiting. We cut loose from the educators and went after the results in our own way. Now, the high schools in the South are on a four year basis. Administrators have accomplished in three years what educators were unable to accomplish in generations. President Pritchett complains of the premedical year for the purpose of furnishing college grade sciences for the preliminaries of medical education. He asks that we do not take away from the colleges and universities that which has always belonged to them. In Pennsylvania we asked fifteen or twenty college presidents whether they would give our boys the opportunity to get in one year this scientific work preliminary to medicine, but they did not do it. The outcome was the premedical year, given in the medical school. Those of us who are working for practical ends and are getting results are in the right.

DR. H. D. ARNOLD, Boston: President Pritchett can come here and say some pretty plain things to you which the Council is not in a position to say. President Pritchett is an eminent man in education, an expert, and impartial. The Council is composed of physicians and may be accused of being prejudiced; therefore, President Pritchett's attitude to-day is helpful, in that he was able to say a few things which the Council could say with less grace. He told you that a definite classification of colleges is practically impossible. Perhaps, therefore, you will be a little more lenient with the Council if it does not make a perfect classification. Our classifications are steps in advance and temporary. That is all we claim for them. President Pritchett's criticism of the ten items taken as a basis for classification is fair, one which every member of the Council recognizes. On the other hand, that classification has been educational as well as for the purpose of fixing standards. Perhaps we gave some items an exaggerated importance, but this emphasis has resulted in much-needed improvement. President Pritchett brings up the question of a permanent basis of classification. Perhaps we are ready for it. I am not quite so optimistic as he is. He offers three groupings of medical schools, and the Council is grouping them into three classes. We differ only as to where we should draw the lines between the different classes. He has not discussed the practical application of these divisions as regards the state boards. The Council is taking into consideration the practical application of its classifications. One other element which he introduced is ideal, but of a type that the Council has hesitated to apply,

namely, the great importance laid on the estimation of the quality of the instructors. No rule or measurement can be applied to the personal element of instruction. It is liable to the charge of unfairness, since it must be based on personal estimate.

DR. J. W. HOLLAND, Philadelphia: The age at which a medical graduate begins the business of life should be considered by practical men. In this country the average age is 28 or 29, while in England it is 25 or 26. In Germany it is 25. Something is wrong with the system of education which postpones the bread-winning period. The natural outcome of this feeling has been that some universities have reduced their preliminary requirement of a college degree down to two years of college work. We must utilize our time and not take two years to do what can be done in one year. The law in Pennsylvania was fixed at a year of science preparation in chemistry, physics and biology. The General Medical Council of Great Britain has never conceded that supervision of preliminary instruction in chemistry, physics and biology is the concern of any other body than the General Medical Council. In Canada it is viewed in the same light. A number of American medical schools have the premedical year, and it is the experience of some of them that the students who get their physics, chemistry and biology in that year in the medical school are quite as well advanced in preparation for medical study as those who get the same subjects during two years in a literary college.

PRESIDENT PRITCHETT, New York: I wish to express my appreciation of the courtesy and friendliness with which the Council has received my remarks. Just one other word: The word "equivalent" is a powerful word in medical education. It is the translation of the word "equivalent" that enables a man to get the right number of credits on pretty nearly any requirement that you can set up. I do not believe with Dr. Holland that the English student gets any such preparation as an educated man whose heart and mind are trained as is to be obtained in a modern college, with all its frailties and faults. But I do heartily agree with him that we have been getting men into medicine too late. When a man gets through college at 23, goes into the medical school for four years, spends a year or two in a hospital, that brings him out absolutely too late. No nation can stand that sort of delay in getting men into practice.

Some Fallacies in the Argument Against Full-Time Clinical Instruction

DR. M. G. SEELIG, St. Louis: The plan that full-time clinical instructors are to displace all teachers who are private practitioners has the advocacy of no one. The varying character of clinical material will always make it both advisable and necessary for the university to offer place and preference to the properly qualified clinical teacher, irrespective of his affiliation with private practice. The advocates of the full-time instructor should never, even implicitly, subordinate the teaching value of the properly qualified private practitioner. Nor is there any important and essential variance of principle in teaching the clinical phenomena of disease, and in teaching function and structure or aberrations of both, in the laboratory. If students can learn to affirm or deny conclusions, either by proper process of reasoning or by the direct comparison of objects to ideas, the discipline of their medical education has been fruitful. And the process by which they should be taught to form proper judgments is exactly the same in the hospital ward as it is in the laboratory. In both places the student is taught certain fundamental truths from which to reach certain definite conclusions. In so many hospital wards and clinic rooms the student is taught to know, rather than to think, which has made it appear that clinical teaching is separate and distinct from fundamental teaching. Clinicians have been inclined to introduce this notion of the subtle, specific teaching value of private practice as something to conjure with in the realm of medical education. The plan for full-time clinical instruction contemplates developing the principles of practice in their most utilizable form, namely, from a variety of clinical material, intensively correlated and studied and housed under one roof. The plan for full-time clinical instruction contemplates the full realization of the intimate relationship between teaching medicine and practicing medicine, and not the injudicious mixture of private practice and teaching. Between the spirit of practice and the spirit of teaching there is no essential ethical difference, but between the demands of practice and the demands of teaching there is a variation so pronounced as practically to preclude the proper performance of both these functions by the same individual. The full-time plan, therefore, rests on this very rational conception of the case and implies absolutely no measure or comparative worth between the vocations of practitioner and teacher. Those who favor the plan of full-time clinical instruction are influenced in no small part by the hope that the properly qualified clinical teacher will foster, stimulate and direct scientific clinical research of a higher order than is commonly produced at present. To encourage scientific clinical research, therefore, the clinical teacher must be provided with an environment as favorable as that of the fundamental teacher.

DISCUSSION

DR. WILLIAM H. WELCH, Baltimore: Some laboratory men are opposed to the plan for full-time clinical teachers; many clinical men, particularly of the younger generation, are enthusiastically in favor of it. The opposition comes largely from those who will be affected by the plan. As regards the German situation, it has become a matter of very serious discussion because, for instance, the surgeons in the German universities are establishing their own private institutions. It is wrong, and they know it is wrong. We cannot any longer look on Germany as our ideal in this regard. I myself feel that it is a great advance reform in methods of medical education. I believe it is one of the things that is going to put our American medical schools in the lead.

DR. WALTER L. BIERRING, Des Moines, Iowa: There has been a fear that this new departure represented an attempt to displace the more established methods of clinical teaching; that it would tend to sacrifice the human element, and closer contact with the profession which has always been regarded as so essential. On the contrary, the proposed plan is to be considered as an aid to clinical teaching, and in that sense as a distinct addition to our methods of medical education.

DR. ARTHUR DEAN BEVAN, Chicago: The Council is convinced of the necessity for the reorganization of clinical teaching along the right lines. Three solutions might be considered. The first is the German solution, represented by such clinical teaching as has been done by Kocher, Mueller, von Eiselsberg and others, where the man is a university teacher who does a limited amount of practice. The second solution is the Brigham solution, adopted by Dr. Cushing and his associates in the Peter Bent Brigham Hospital. All of the teacher's work is done under one roof. He has no consultations outside of the hospital. People who desire to see him must go to the hospital. A limited number of private beds are set aside, and the clinician takes care of a certain number of private patients in these beds with the same assistants and laboratory workers that he uses in his clinic. One of the most important clinics in this country is given by a man who often has as high as twenty-five private patients in his service at one time, and a large number of them are used for clinical instruction, and are very glad to be so used. A patient who pays a thousand dollars to his doctor may be quite as valuable a unit in a clinical research as the patient who occupies a ward bed. The third solution is the one presented by the General Education Board. I am quite in sympathy with the general plan, but they have introduced an error which would not have been introduced if the plan had been devised by men who were familiar with the clinical work. That error is the introduction of a clause permitting that man to do private practice, with the understanding that the fees from that practice go not to himself, but to the department of the university. The Council on Medical Education is not taking a controversial attitude in this matter, but is going to use all its influence to develop the reorganization of clinical teaching on the right lines.

Minimum Expense of Maintenance of First Two Years of an Acceptable Medical School

Dr. F. C. Waite, Cleveland: The cost of each of the laboratory departments falls under three general heads: salaries, maintenance and additions to equipment. Aside from the building and fixed furniture, the movable apparatus for each laboratory sufficient to care for the teaching of fifty students in a class is not far from an average of $5,000 per laboratory. The figure of $25,000 for five laboratories is conservative. To this should be added at least $10,000 for a working library, and teaching collections, especially in anatomy and pathology. Such collections represent a value of at least $5,000. They cannot be purchased; they must be accumulated. There is, therefore, represented in the equipment of five laboratory departments at least $40,000. The salaries for each department will amount to at least $7,000; library appropriation, $200; breakage and repairs, $500; material for students, $750, allowing $15 per student, as an average, for the five laboratories. The sum-total for the five laboratories would amount to $41,750. The minimum salary would be $3,000; the dieners and technicians, of course, receive considerably less. An acceptable school must have at the head of its laboratory department men who are not only capable of directing the teaching, but also of doing and directing some research. Some men when they start may be willing to accept less than $3,000, but as they continue in the work they deserve and must receive some increment, so that the average of the five professorial salaries is certainly $3,000. The professorial salary scale in many schools is now $4,000 or above. To teach a class of fifty students there should be at least three teachers to each department. In laboratory exercises an instructor cannot care for over fifteen to twenty men and get good results. Of course, all of these men should be full-time teachers. Three men to a department, five of these being heads of the departments, and eleven subordinates, constitute the full-time teaching staff in the laboratory department. The subordinates should not receive less than $1,500 a year. Technical assistants are absolutely necessary, and may be paid at least $900 a year, in order to make the place attractive as a career. To attract and hold capable teachers, library facilities must be provided. The initial investment will be about $10,000. The cost of maintenance for a year is about $200 per department. This takes no account of overhead charges in connection with maintaining the buildings and ground, nor is any taken of general administrative expense. Allowing $6,000 per year for such expense gives a minimum total of $50,000 for maintaining the two laboratory years. Income from fees is about $150 per student. The difference between the tuition fees and the maintenance expense must come from some other source.

Minimum Expense of Maintenance of the Clinical Department

Dr. John L. Heffron, Syracuse, N. Y.: I have gathered data from twenty-three Class A schools. At Johns Hopkins the total expense of the clinical department is $141,742. If interest on money invested in buildings and permanent equipment is included, the clinical teaching in Johns Hopkins Medical School costs $375,000 a year. Some schools report an annual expenditure for this work of considerably more than $150,000. In my own school, which does not own a hospital, the clinical teaching expense in hospitals is nil, and yet we think it is efficient. We have a college dispensary which with equipment cost $95,000. The laboratories in the dispensary are equipped and supplied by the university. The laboratories in the affiliated hospitals are largely supported by the hospitals, the university expending not to exceed $200 for this purpose. Each student is required to own his own microscope. For the laboratories of clinical diagnosis, clinical pathology and clinical bacteriology we expend annually in salaries and supplies about $5,000. If the university should charge against us the interest on $95,000 and the cost of up-keep, our total annual expense for clinical teaching would be approximately $10,000. The cost of clinical teaching varies, depending on whether the college owns its own hospital, dispensary and clinical laboratories, and whether the clinical teachers are paid on a part-time or full-time basis. Good clinical teaching can be done with a volunteer clinical faculty in affiliated hospitals, but it is not the best way or the right way. A medical school should own or use, or control and use, a general hospital, and a dispensary, and both should be fully equipped with clinical laboratories for students' use. Clinical teaching can be done efficiently by men who are paid enough to permit them to devote sufficient time to the study and teaching of their subject, and who are permitted to engage in consulting practice which does not interfere with their duties as teachers and investigators. Each major department would require in salaries about $7,500 a year, or a total expenditure for medicine, surgery, pediatrics and obstetrics of $30,000 a year in salaries. In Syracuse the cost per patient per day in the hospital we use is $1.75. The city or some responsible party pays $1.50 of this sum, leaving a daily deficit of 25 cents per patient, which must be made up from the treasury of the university or by subscription. Take as a standard hospital one with four units of twenty-four beds each, and suppose that all the beds were occupied for 75 per cent. of the time; that would give an annual deficit representing the cost to the university or to the public over what had been received of $13,324. Added to the salaries, the total expense would be about $45,000. This is so nearly the $50,000 which it had been estimated is necessary for the conduct of the clinical department of a first-class medical school that it is quite significant.

Report of Committee on Education and Pedagogics

Dr. William P. Harlow, Boulder, Colo.: Views regarding the college work required preliminary to the medical course are that it cannot be given thoroughly in one year unless a course is specially arranged for the purpose, and that a course quite similar to it might be given in one year of the ordinary college course in arts by a close correlation with high school work in the required branches. That a special course would be recognized as a complete year toward the A.B. degree is not claimed by the bulk of its supporters, although such recognition might be accorded it for the degree of B.S. Attempts to meet the requirements as to preliminary education by arranging a premedical course as a sort of adjunct to a medical college is not approved by the committee. A medical school cannot afford to divert its energies to such a purpose. It seems so certain that the amount and kind of work we are requiring as a prerequisite to medicine cannot and ought not to be given in one year, that wisdom lies only in adopting the two year rule.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

February, XXXVI, No. 2, pp. 51-100

1 *Some Phases of Cardiorenal Disease from Therapeutic Standpoint. N. A. Pashayan, Schenectady.
2 Few of the More Frequent Ear Conditions. J. J. Rainey, Troy.
3 Report of Health Director in Public Schools. C. P. McCord, Albany.

1. **Phases of Cardiorenal Disease.**—Pashayan summarizes his views as follows: While cardiorenal disease has apparently a uniform pathologic histology, its clinical manifestations are diverse and the therapeutic measures to be adopted differ in important details. The essential principle to be borne in mind is that hypertension is not an indication for its suppression. It is a protective measure adopted by nature, and when it cannot be reduced by regulating the diet it should be left alone. Nitrites have no utility except in aborting attacks of angina pectoris or pulmonary edema. When lues is not a factor iodids are equally useless and may even do harm. Sudden reduction of blood pressure is a bad omen and it often indicates cardiac dilatation and presages edema and hydrothorax. When we meet such reduction and when cardiac decompensation is impending, even in the presence of hyper-

tension, digitalis should be given in full doses. The theoretical pressor and cumulating effects of this drug have been clinically established to be without foundation.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

February, LXXI, No. 2, pp. 209-384

4 *Physiology and Pharmacology of Excised Human Uterus. C. C. Lieb, New York.
5 Morphology and Histogenesis of Stromatogenous Uterine Neoplasms. L. W. Strong, New York.
6 *New Method of Painless Childbirth. (Tocanalgine.) A. M. Hellman, New York.
7 Necessity of Study of Fetal Heart Sounds in Placenta Praevia. G. Baughman, Richmond, Va.
8 Plea for More Consistent Endeavor to Diagnose Tubal Pregnancy Before Rupture. J. J. Mason, Vancouver, Canada.
9 Bladder Irritability in Women. W. H. Cary, Brooklyn.
10 Kinetic System and Treatment of Peritonitis. G. W. Crile, Cleveland.
11 Ectopic Pregnancy and General Practitioner. B. R. McClellan, Xenia, O.
12 *Operations at Home, When and Under What Circumstances Are They Justifiable. J. E. Sadlier, Poughkeepsie, N. Y.
13 *Report of Year's Work with Abderhalden Reactions. A. J. Skeel, Cleveland.
14 *Treatment of Puerperal Thrombophlebitis. J. F. Baldwin, Columbus.
15 Pregnancy and Incipient and Inactive Tuberculosis. W. G. Dice, Toledo.
16 Labor in Elderly Primipara. J. R. Freeland, Pittsburgh.
17 *Treatment of Abortion on Basis of Its Pathology. C. W. Barrett, Chicago.

4. **Physiology and Pharmacology of Excised Human Uterus.**—Lieb claims that if the pituitary gland is to be regarded as intimately concerned with the onset of labor, the hormone should be sought, not in the posterior lobe, but in the anterior portion of the gland.

6. **New Method of Painless Childbirth (Tocanalgine).**—See editorial, Motherhood Without Fear, THE JOURNAL, Dec. 19, 1914, p. 2233.

12. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1418.

13. **Abderhalden Reactions.**—Of 11 cancer cases tested by Skeel 8 were positive to both placental and cancer albumin. Two were negative to both. One was not tested to cancer albumin. Among 9 eclamptics and severe preeclamptic cases, 8 gave positive reactions of usual intensity. One was negative. Syphilitics both before and after salvarsan showed the usual reactions. Of 16 sexual perverts all non-pregnant, 8 were positive and 8 negative. Of positive non-pregnants, 9 were cancer, 3 fibroids, one pseudocyst, 4 inflammatory conditions, 8 sexual perverts, 2 unexplained. Total 27.

14. Abstracted in THE JOURNAL, Oct. 17, 1914, p. 1418.

17. **Treatment of Abortion on Basis of Its Pathology.**—The treatment of abortion suggested by its pathology according to Barrett is as follows: As a prophylactic measure women of a child-bearing age should be kept as nearly as possible free from the pathologic conditions which cause abortion: syphilis thoroughly treated, displacements corrected, deciduitis removed, etc. Conditions threatening abortion should receive attention, such as the removal of an ovarian tumor, or sometimes a fibroid or an incarcerated retrodisplaced pregnant uterus restored to position, operatively or non-operatively. An occasional patient requiring a therapeutic abortion in the early months should be anesthetized in a manner that will best conserve her forces and the uterus should be completely emptied at one sitting. A patient whose health requires that they should not go to term should usually be rendered sterile at this time or some future sitting. Threatened abortion should be treated by rest and sedatives. Inevitable abortion is in good condition only when the uterus is empty. Bleeding or not bleeding, working or at rest, infected or non-infected, no condition leaves the uterus in a more favorable condition by reason of a partial or complete ovum within its cavity. As the complete non-infected abortion is altogether more desirable than the incomplete, so to a greater extent is the complete infected abortion less undesirable than the incomplete with the same kind of infection.

American Journal of Public Health, Boston

February, V, No. 2, pp. 85-182

18 *Some Results of First Year's Work of New York State Commission on Ventilation. C. E. A. Winslow and Others, New York.
19 Sanitation of City of Vera Cruz, Mexico and Army Camps During Occupation of United States Expeditionary Forces. J. T. B. Bowles, Vera Cruz, Mexico.
20 *Widal Reaction Following Administration of Typhoid Vaccine. E. M. Wade and O. McDaniel, Minneapolis.
21 Laboratory Diagnosis of Bubonic Plague. J. F. Anderson, Washington, D. C.
22 Physical Examination of Employees of New York City Department of Health. C. B. Slade, New York.

18. **Results of Work of Commission on Ventilation.**—The following tentative conclusions are drawn by the commission as the result of experiments: 1. A very high room temperature such as 86 F. with 80 per cent. relative humidity, produces slight, but distinct elevation of body temperature, an increase in reclining heart rate, an increase in the excess of standing over reclining heart rate, a very slight lowering of systolic blood pressure, and a marked fall in the Crampton value. 2. A moderately high room temperature, 75, with 50 per cent. relative humidity, has all the effects noted above although of course in less degree than the extreme temperature condition. 3. Even the extreme room temperature of 86, with 80 per cent. relative humidity, shows no effect on rate of respiration, dead space in the lungs, acidosis of the blood, dissociation of oxyhemoglobin, respiratory quotient, rate of heat production, rate of digestion, carbohydrate or protein metabolism, concentration of the urine and skin sensitivity. 4. The power to do either mental or physical work, measured by the quantity and quality of the product by subjects doing their utmost, is not at all diminished by a room temperature of 86 with 80 per cent. relative humidity. 5. On the other hand, the inclination to do physical work, and the inclination to do mental work are diminished by sufficiently high room temperatures. So far as physical work is concerned our tests show a decrease in actual work performed, when the subject had a choice between working or not working, of 15 per cent. under the 75 condition and of 37 per cent. under the 86 condition, as compared in each case with 68. 6. Stagnant air at the same temperature as fresh air, even when it contains 20 or more parts of carbon dioxid and all the organic and other substances in the breathed air of occupied rooms, has so far, shown no effect on any of the physiologic responses listed above under 1 and 3 nor on the power or inclination to do physical or mental work nor on the sensations of comfort of the subject breathing it. 7. On the other hand the appetite for food of subjects exposed to such stagnant air may be slightly reduced. 8. These experiments seem to indicate that overheated rooms are not only uncomfortable but produce well-marked effects on the heat regulating and circulatory systems of the body and materially reduce the inclination of occupants to do physical work. The most important effects of "bad air" are due to its high temperature, and the effects of even a slightly elevated room temperature such as 75 are sufficiently clear and important to warrant careful precautions against overheating. 9. The chemical changes in the breathed air of occupied rooms are of comparatively minor importance, although the substances present in such air may exert a slight decrease in the appetite for food.

20. **Widal Reaction Following Administration of Typhoid Vaccine.**—The blood of persons immunized with typhoid vaccine prepared according to directions of U. S. Army, Wade and McDaniel state, should show presence of the Widal reaction at a dilution of 1:50 in the large majority of cases, probably about 90 per cent. Failure to find this high percentage of positive Widal reactions in persons thus vaccinated appears to indicate some technical error in methods and an accompanying failure to confer full immunity. In communities in which paratyphoid occasionally appears, especially in institutions, the authors suggest that it might be prefefable to use a mixed vaccine of typhoid and paratyphoid after the recommendation of Castellani. In institutions in

which typhoid exists, persons should be immunized on admittance. In institutions in which typhoid carriers are usually present, they should be detected and properly supervised. Vaccination alone must be considered the only necessary prophylactic measure to be taken against the occurrence of typhoid.

American Journal of Roentgenology, Detroit

December, II, No. 2, pp. 541-579

23 *Deep Roentgen Therapy and Its Application in Treatment of Malignant Growths. S. Stern, New York.
24 Possible Effect of Morphin on Intestinal Motility. H. K. Pancoast, Philadelphia.
25 Hydrogen Roentgen Ray Tube. E. W. Kelly.
26 Boiler System of Water Circulation Applied by Water-Cooled Roentgen Ray Tubes. J. M. Garratt, Buffalo.
27 Clip for Holding Dental and Other Films During Development and Drying. S. Tousey, New York.

23. Abstracted in The Journal, Oct. 10, 1914, p. 1321.

Annals of Surgery, Philadelphia

February, LXI, No. 2, pp. 129-256

28 *Cancellous Bone Lesions. G. Barrie, New York.
29 Case of Multiple Congenital Osteochondromata. R. D. Carman, Rochester, Minn., and A. O. Fisher, St. Louis, Mo.
30 *Preliminary Report on Study of Protective Ferments of Blood by Abderhalden Method, After Transplantation of Organs. C. Goodman, New York.
31 *Spina Bifida. N. Sharpe, New York.
32 Developmental Reconstruction of Colon Based on Surgical Physiology. J. M. Lynch and J. W. Draper, New York.
33 Colocolostomy. A. S. Lobingier, Los Angeles.
34 *Duodenotomy in Common Duct Stone. G. M. Todd, Toledo, O.
35 *Mortality Statistics of Two Hundred and Seventy-Six Cases of Acute Intestinal Obstruction. J. B. Deaver and G. G. Ross, Philadelphia.
36 Preservation of Iliohypogastric Nerve in Operation for Cure of Inguinal Hernia. C. N. Dowd, New York.
37 *Complete Fracture of Lower Third of Radius in Childhood with Greenstick Fracture of Ulna. P. G. Skillern, Jr., Philadelphia.
38 *Reformation of Gall-Stones After Operation. E. M. Stanton, Schenectady, N. Y.
39 Double Internal Jugular Vein—High Bifurcation of Common Carotid Artery. J. W. Churchman, New Haven, Conn.

28. **Cancellous Bone Lesions.**—Barrie reports twenty cases of cancellous bone involvement that cannot be classified with the intra-osseous lesions of the long bones that are distinctly non-syphilitic, non-tuberculous, non-malignant and non-suppurative. Neither can they be grouped with the diseases of bone whose etiology is known to be due to disturbed metabolism through the ductless glands. The cases presented are readily divisible into three separate groups of cancellous bone lesions as follows: (1) Metaplastic osteomalacia—systemic lesions (3 cases); (2) hemorrhagic osteomyelitis—local lesions (16 cases); (3) osteochondrofibroma—congenital tumor (1 case).

30. **Study of Protective Ferments of Blood by Abderhalden Method.**—The thyroid, on account of its accessibility and of the ease with which slight degenerative changes may be recognized, was chosen as the organ to transplant in this study. Of Goodman's autotransplants, in two consecutive instances, the thyroid having been removed from the body and reimplanted in the same animal, the results were satisfactory, the thyroid tissue retaining its normal appearance and, apparently, its activity. In a series of homotransplants, although several of the animals lived for some time, the transplant invariably underwent degenerative changes with absorption. From a series of fourteen specimens so far obtained at the laboratory of experimental surgery at the New York University, work conducted through the courtesy of Dr. George D. Stewart, it has been possible in eight instances to demonstrate the presence in the blood of a protective ferment capable of digesting suprarenal tissue. Tests with different substrata are being made to determine whether organs other than the suprarenal are sensitive to a thyroid transplant.

31. **Spina Bifida.**—Sharpe believes that the vast majority, if not all, cases of spina bifida are caused by the pressure exerted by an excessive secretion of cerebrospinal fluid, or, what is more probable, some obstruction to its normal outflow. This pressure, acting in early fetal life at different stages of development, prevents the closure at certain points of the bony canal. This theory is applicable to all forms of spina bifida and has the support of much clinical evidence.

34. **Duodenotomy in Common Duct Stone.**—Basing conclusions on a study of nine cases with only one death, Todd favors duodenotomy when indicated.

35. **Acute Intestinal Obstruction.**—Of the 276 patients reported on by Deaver and Ross 158 recovered and 118 died—a mortality of 42 per cent. One is reported as improved, possibly one of the rare instances of spontaneous recovery or a mistaken diagnosis. The patient noted as unimproved on the records probably declined an operation and insisted on discharge from the hospital. In 241 patients the records were inadequate as to the average time from the onset of the condition to the time of operation. In the patients that recovered it was 61.7 hours or over two and a half days, and in the patient that died, ninety-seven hours or four days and one hour.

Hernias and postoperative and postinflammatory adhesions furnished 253 of the 276 cases of obstruction. There were in all 156 patients of strangulated hernia, or 56.4 per cent. of the total. Of 77 strangulated inguinal hernias, 57, or 74 per cent., recovered, and 20, or 26 per cent., died. Of 50 cases of strangulated femoral hernia, 36, or 72 per cent., recovered, and 12, or 24 per cent., died. One was noted as improved, possibly spontaneous recovery or reduction; and one is noted as unimproved. Of 21 patients of strangulated umbilical hernia, 12 recovered and 9 died, or 42 per cent. Of seven ventral or incisional hernias, 4 recovered and 3 died, or 42 per cent. Next to hernia in number are postoperative adhesions, there being 81 cases, or 29 per cent. of the total number.

Of the 81 patients, 41 recovered and 40 died, a mortality of 49.3 per cent. Of the 81 patients of postoperative adhesions, 51 followed operations for appendicitis and 44 of this series had had drainage at the original appendiceal operation. Each drainage case can safely be held to mean a case in which operation was delayed beyond the time of election. In line with endeavors to prevent instead of treating avoidable surgical conditions, nothing is more important than to forestall the development of pus within the peritoneal cavity. Of the 51 patients 27 died. Seventeen cases are stated to have been due to postoperative adhesions, the primary cause not being given. Fourteen followed operations on the female pelvic organs, hysterectomies, salpingo-oophorectomies, etc. Postinflammatory adhesions were 16 in number. Of these 11 died, a mortality of 68.7 per cent.

There were three cases of fecal impaction with two deaths, a mortality of 66⅔ per cent. There were five cases of volvulus, of which three recovered and two died, or 40 per cent. There were eight cases of acute obstruction complicating carcinoma of the sigmoid. In 63 cases, with records of vomiting, there were 35 recoveries and 28 deaths. In the patients recovering 5 only had reached the stage of fecal vomiting, but the average length of time the patients had been vomiting was two days and one hour. Of the 28 patients dying, 14 had fecal vomiting and 14 non-fecal vomiting only. The average duration of the vomiting had been two days and sixteen hours. In 90 patients in which a record was kept of the fecal evacuations, 52 were patients that recovered and 38 died. A review of the entire mass of statistics on this series of cases makes it evident that in almost every instance, in spite of symptoms so plain as to be pathognomonic, diagnosis has been tardy and operation delayed. Prompt diagnosis and immediate operation will reduce the mortality in acute intestinal obstruction to a mere fraction of that encountered at present.

37. **Forearm Fractures in Childhood.**—There is a fracture of the lower third of the radius and ulna peculiar to childhood and which constitutes about 13 per cent. of fractures of the forearm. This fracture commonly occurs before the age of puberty, is most frequently encountered during the

summer months, and is caused usually by the effects of gravity plus momentum. It is characterized by complete fracture of the radius with dorsal and lateral displacement of the lower fragment and by incomplete greenstick fracture of the inner half of the ulna, usually at a higher level, the outer half remaining intact and maintaining the deformity of the ulna, which is a bowing of the lower fragment toward the radial side and which, in turn, maintains the displacement of the distal fragment of the radius. In reducing this fracture the aim must be to convert the incomplete greenstick into a complete fracture by forcibly rupturing the still intact outer fibers, thereby enabling restoration of alignment of the distal fragment of the ulna with that of the axis of the bone, the distal fragment of the radius coincidentally shifting itself automatically into position. The criterion of reduction is the restoration of the normal alignment of the inner border of the ulna. Treatment is begun by the administration of an anesthetic if deformity exists. Otherwise a carefully prepared and padded splint (or splints) is applied firmly and without undue pressure. Skiagraphic control of reduction is important. Massage and passive motion are adapted to the individual case. The splints must be removed as soon as there is firm union. Operation is indicated only when conservative treatment is admittedly a failure. It will seldom be necessary. The inlay method of Albee should be used instead of an array of metal fixtures.

38. **Reformation of Gall-Stones.**—If no foreign body is left in the gall-bladder or ducts after the operation, Stanton says, the reformation of gall-stones is so rarely observed as to constitute almost a negligible factor in gall-bladder surgery. Cholecystectomy does not afford a much greater immunity against reformation of calculi than does cholecystostomy.

Arizona Medical Journal, Phoenix

February, III, No. 2, pp. 7-20

40 Tuberculous Laryngitis. C. R. K. Swetnam, Los Angeles.

Boston Medical and Surgical Journal

March 4, CLXXII, No. 9, pp. 321-356

41 Carnivorous and Herbivorous Types in Man. J. Bryant, Boston.
42 Roentgen Diagnosis of Gall-Stones by Improved Methods. L. G. Cole, New York, and A. W. George, Boston.
43 *Study of Efficiency of Mixed Toxins (Coley) in Inoperable Sarcoma. (To be continued.) T. W. Harmer, Boston.
44 Study of Disturbances of Stomach. (To be continued.) H. F. Hewes, Boston.

43. **Efficiency of Mixed Toxins in Inoperable Sarcoma.**—Only those cases in which data were given and which conformed with the criteria adopted for analysis were selected by Harmer for this series. All cases must have been proved by microscopic examination; all must have been primary or recurrent inoperable sarcoma, or cases in which the disease could not be eradicated by operation; all must have been under treatment at least three weeks; all must have been free from concurrent treatment (Roentgen ray, radium, arsenic preparations, etc.). Of the 222 cases abstracted, 100 were chosen as suitable for this analysis. The cases are arranged in six groups, determined by the effect of the toxins. Group A. Cases in which there was no appreciable effect, 12 cases. Group B. Cases in which the growths softened but did not appreciably diminish in size, 5 cases. Group C. Cases in which growths disappeared or practically disappeared, but returned, 20 cases. Group D. Cases in which growths disappeared but metastases simultaneously occurred, 10 cases. Group E. Cases in which growths diminished in size but still persisted, 14 cases. Group F. Apparent cures in which growths disappeared and no metastases have occurred, 73 cases. Spindle cell sarcoma, 26 cases; 36 per cent. apparent cures. Round cell sarcoma, 28 cases; 39 per cent. of apparent cures. Melanotic sarcoma, 6 cases, 5 in Group D, one in Group F. Giant cell sarcoma, 14 cases; 11 apparent cures. Mixed cell sarcoma, 13 cases; 5 apparent cures.

Harmer concludes that mixed toxins of streptococcus and bacillus prodigiosus (Coley) are of value in certain cases of inoperable sarcoma. He emphasizes that the treatment of primary or recurrent inoperable sarcoma with mixed toxins must be intensive, and that the institution of this treatment is unjustifiable in cases in which operative measures of reasonable safety offer possible hope for removal. Seventy-three of the cases analyzed after most rigorous criticism have been regarded as apparent cures. The small round cell type apparently offers the greatest expectation of benefit, followed closely by the spindle-cell type (excluding fibrosarcoma). Only a relatively small number of mixed cell type have been benefited. The use of toxins in cases with multiple melanotic growths does not seem justifiable but their use in single melanotic growths is legitimate. Regarding the tissue of origin the greatest number of apparent cures have occurred in bone sarcoma (exclusive of giant cell cases) over 18 per cent. of the total number of apparent cures, with an equal division of round cell and small cell types. Giant cell cases furnish about 15 per cent. of the total number of apparent cures. Primary, inoperable, round cell sarcomata of the cervical glands compose about 10 per cent. of apparent cures. Sarcomata arising from fascia and muscle, which have been apparently cured, have been situated in the lower extremity, abdominal wall, and back. They composed about 16 per cent. of the total number of apparent cures. Nine of twelve are of spindle cell type. In a small number of cases the toxins produce striking relief of pain.

Cleveland Medical Journal

January, XIV, No. 1, pp. 1-80

45 *Hirschsprung's Disease. Report of Case. W. E. Lower, Cleveland.
46 Treatment of Psychoneurotic Patients. T. A. Williams, Washington, D. C.
47 Geologic Evidence of Man's Antiquity. T. W. Todd, Cleveland.
48 *Goiter as it was Known One Hundred Years Ago. B. L. Spitzig, Cleveland.
49 Scopolamin Amnesia in Labor. J. T. Smith, Jr., Cleveland.

45. **Hirschsprung's Disease.**—The method Lower employed in his case, that of a boy 11 years of age, was a primary resection of the entire colon from the hepatic flexure to the lower part of the rectum. Unfortunately the patient died. The operation was not especially difficult and the patient was not shocked as result of the operation, reacting very well and seemed to be in fairly good condition for several days. There was some vomiting, never any distention, and no evidence of peritonitis. The bowels moved without much difficulty on the second day. Just what the cause of the death was in this case Lower was unable to determine, but there seemed to be some interference with the metabolism rather than a local causative factor.

48. **Goiter as it was Known One Hundred Years Ago.**—Spitzig presents what he terms a free and withal accurate rendition of the chapter on "goiter" in an old German encyclopedia. "The Great Conversational Lexicon for the Cultured," published by Meyer in 1851. The entire work is included to permit of a comparative study of the ideas current in the first half of the nineteenth century, to secure for the old masters a just recognition of their able work.

Georgia Medical Association Journal, Augusta

February, IV, No. 10, pp. 285-309

50 Physician and Medical Society. S. R. Roberts, Atlanta.
51 Treatment of Cerebrospinal Meningitis by Drainage of Lateral Ventricle. R. V. Martin, Savannah.
52 Epidemic Cerebrospinal Meningitis from Bacteriologic Standpoint. K. R. Collins, Atlanta.
53 Reuniting Brachial Plexus. Report of Case. L. C. Fischer, Atlanta.
54 Fusiform Bacillus Found in Vagina. G. T. Horne, Augusta.
55 Psychiatry as Problem in Medical Colleges. J. W. Mobley, Milledgeville.

Indiana State Medical Association Journal, Fort Wayne

February, VIII, No. 2, pp. 63-112

56 Aids to Diagnosis in Pelvic Inflammations in Women. A. E. Schweitzer, Indianapolis.
57 Better Obstetrics. H. D. Fair, Muncie.
58 *Serum Test for Pregnancy. J. M. Ketcham, Indianapolis.
59 How to Advance Pharmacy in Indiana. C. B. Jordan, Lafayette.

58. Abstracted in THE JOURNAL, Oct. 24, 1914, p. 1500.

Journal-Lancet, Minneapolis

February 15, XXXV, No. 4, pp. 81-108

60 Medical Education and Medical Profession. E. P. Lyon, Minneapolis.
61 Status of Medical Education. R. O. Beard, Minneapolis.
62 Bifida, Cranial and Spinal. Report of Four Cases. J. D. Taylor, Grand Forks, N. Dak.
63 Syphilis and Its Relation to Society. A. J. McLaughlin, Sioux City, Ia.
64 Dilatation of Cervix by Means of Bags. R. T. La Vake, Minneapolis.

Journal of Nervous and Mental Disease, Lancaster, Pa.

February, XLII, No. 2, pp. 65-128

65 Unilateral Hypertrophy or Trophedema of Limbs. Report of Case. H. T. Pershing, Denver.
66 Loss of Memory Alleged by Murderers. T. Diller, Pittsburgh.
67 *Neuropathologic Findings in Case of Pernicious Anemia with Psychic Implication. J. A. F. Pfeiffer, Washington, D. C.

67. **Neuropathologic Findings in Anemia.**—The conclusions deducted by Pfeiffer from his study are that cerebral alterations can be demonstrated in progressive pernicious anemia, and that in cases with psychic phenomena, changes in the cortical neurones occur similar to those found in the psychosis of toxemic origin.

Lancet-Clinic, Cincinnati

February 27, CXIII, No. 9, pp. 225-252

68 Harrison Act. F. H. Freericks, Cincinnati.
69 Anoci-Association in Stomach and Gall Tract Surgery. G. W. Crile, Cleveland.
70 Bone Transplants. I. Cohn and G. Mann, New Orleans.

Maine Medical Association Journal, Portland

February, V, No. 7, pp. 241-280

71 Surgical Diarrheas. S. G. Gant, New York.
72 Use and Misuse of Hexamethylenamin. C. M. Robinson, Portland.
73 Pneumonia. E. C. Cook, York Village.

Medical Record, New York

March 6, LXXXVII, No. 10, pp. 379-420

74 Uterine Fibroids, Menorrhagia and Radium. R. Abbe, New York.
75 Radiochemicotherapy; Internal Therapeutics of Radio-Elements. W. J. Morton, New York.
76 Efficiency of Radio-Active Waters for Control of Faulty Elimination. C. E. Field, New York.
77 Epileptic Type of Nervous Constitution. R. G. MacRobert, New York.
78 Cereals in Milk Modification. F. B. Cross, Brooklyn.
79 *New Curative Treatment for Pneumonia. F. E. Park, Stoneham, Mass.

79. **New Curative Treatment for Pneumonia.**—For a period of two years Park has tried out his method on a large number of cases of various acute infectious diseases, mostly of the respiratory tract, and in no case has he seen any untoward results. The percentage of cures in all the cases observed (the patient beginning to improve markedly within a very short time of the administration of the remedy, and convalescence being established usually within three days) has so far been 100. Park cites case histories of twelve cases of acute lobar pneumonia, all in adults, the age ranging from 19 to 90 years. Park gives intravenous injections of a solution which is prepared as follows: In 2 ounces of chemically pure distilled water dissolve 15 grains each of sodium salicylate and the soluble phosphate of iron. This solution is sterilized by heat and on cooling there is added 15 minims of a saturated calcium-creosote mixture, the whole then being passed through a small laboratory porcelain filter. The injections are made through the skin, with an all-glass syringe, using a 27-gauge needle, into one of the large veins of the forearm. The dose varies from 2 to 5 c.c., according to circumstances. The injection must be made very slowly.

Michigan State Medical Society Journal, Grand Rapids

March, XIV, No. 3, pp. 149-212

80 Chronic Intestinal Stasis—Fluoroscopic and Roentgen Ray Diagnosis in Light of Operative Findings. W. S. Bainbridge, New York.
81 *Some Aspects of Congenital Syphilis Affecting Nervous System. C. D. Camp, Ann Arbor.
82 Prognosis of Cancer of Stomach. J. H. Andries, Detroit.
83 Stephen Hales—Preacher Physiologist. W. J. Stapleton, Jr., Detroit.
84 Tuberculous Meningitis and Tabes Dorsalis in Woman Eight Months Pregnant. Death Due to Lobar Pneumonia. Necropsy. C. D. Camp, Ann Arbor.
85 Some Phases of Infantile Paralysis Problem. C. L. Washburne, Ann Arbor.
86 Fulminating Otitis Media, Mastoiditis, Extensive Sigmoid Sinus Thrombosis, Ligation of Internal Jugular Vein, Recovery. H. I. Lillie, Ann Arbor.
87 Case of Congenital Ptosis and Its Correction by Hess Operation. C. E. Abell, Ann Arbor.
88 Case of Abdominal Cesarean Section Following Interposition Operation for Uterine Prolapse, Complicated by Placenta Praevia. 2. Case of Abdominal Cesarean Section for Contracted Pelvis After Early Rupture of Membranes. F. M. Loomis, Ann Arbor.
89 Case of Syphilis with Early Central Nervous Involvement. U. J. Wile, Ann Arbor.
90 Case of Congenital Atresia of Esophagus. J. B. Jackson, Kalamazoo.

81. **Syphilis Affecting Nervous System.**—A negative history for syphilis in the parents of a patient, no matter how carefully inquired into, cannot, Camp says, be trusted to rule out the diagnosis of congenital syphilis of the nervous system. A negative Wassermann reaction on the blood of both parents is not sufficient to exclude the diagnosis of congenital syphilis of the nervous system. Mental defect often associated with paralytic and convulsive phenomena is frequently due to congenital syphilis. The diagnosis in such cases must be made by the peculiar clinical manifestations, but it will often be confirmed by a positive Wassermann reaction on the blood or cerebrospinal fluid or both and by the results of therapy. The pathology in such cases is probably a chronic interstitial encephalitis. There are many cases of meningoencephalitis and meningomyelitis occurring in children that are due to inherited syphilis but which are often mistaken for tuberculous meningitis or for poliomyelitis. The clinical findings are the best diagnostic criteria in such cases.

Military Surgeon, Chicago

February, XXXVI, No. 2, pp. 105-203

91 An Ambulance Company. L. L. Hopwood, U. S. Army.
92 Suggestions for Field Emergency Case. P. C. Fauntleroy, U. S. Army.
93 Medical Department of Advance Base Brigade. D. N. Carpenter, U. S. Navy.
94 Advisability and Practicability of Specialists in Medical Corps of Navy. N. J. Blackwood, U. S. Navy.
95 Influence of Immigration on Dissemination of Tuberculosis; and Importance of Detecting Disease. F. A. Ashford, U. S. P. H. Service.
96 Practical Method of Embalming on Shipboard. E. Francis, U. S. P. H. Service.

New Mexico Medical Journal, Las Cruces

February, XIII, No. 5, pp. 157-186

97 Orchitis and Epididymitis. F. F. Fadley, Albuquerque.
98 Eradication of Tuberculosis and Means by which it May be Accomplished. F. C. Smith, Fort Stanton.
99 Obstruction of Bowels. R. L. Bradley, Roswell.
100 Some Duties of Physician to Laity. W. G. Hope, Albuquerque.
101 Kidney Efficiency. H. A. Ingalls, Roswell.
102 Construction Camp, Elephant Butte, New Mexico. J. D. Graham, New Mexico.

New York Medical Journal

March 6, CI, No. 10, pp. 437-492

103 Spinal Anesthesia in Gynecology. H. J. Boldt, New York.
104 Symptoms of Disease of Pituitary. J. H. W. Rhein, Philadelphia.
105 Differential Diagnosis Between Acute Pathologic Perforations within Abdomen. J. E. Summers, Omaha.
106 Nature and Pathogenesis of Epilepsy. L. P. Clark, New York.
107 Applicability of Binet-Simon Intelligence Tests in Psychoses of Senium. L. Wender, Washington, D. C.
108 Vincent's Angina. Report of Case. M. J. Synnott, Montclair, N. J.
109 Roentgen Ray Treatment of Exophthalmic Goiter. M. K. Fisher, Philadelphia.
110 Gonorrhea with Unusual Complications (Phlebitis; Epididymitis). M. Zigler, New York.
111 Roentgen Diagnosis of Some Pathologic Conditions of Large Intestines. L. Jaches and M. Rosensohn, New York.

Pennsylvania Medical Journal, Athens

February, XVIII, No. 5, pp. 333-416

112 Original Surgical Uses of Bone Graft. F. H. Albee, New York.
113 Acute Surgical Metastatic Infections with Especial Reference to Bones, Joints and Periarticular Structures. N. Ginsburg, Philadelphia.
114 Lateral Repair of Lateral Tear of Perineum. W. R. Davies, Scranton.

115 Surgery of Spinal Cord. J. S. Rodman, Philadelphia.
116 Treatment of Fibromyomata Uteri; Whether Surgery or Radiotherapy. S. E. Tracy, Philadelphia.
117 Some Unusual Forms of Congenital Cataract. W. C. Posey, Philadelphia.
118 Importance of Early Recognition of Invasion of Nervous System. W. K. Walker, Pittsburgh.
119 *Results in Series of Forty-Five Cases of Syphilis of Central Nervous System Treated by Swift-Ellis Salvarsanized Serum Method. C. C. Wholey, Pittsburgh.
120 Swift-Ellis Treatment of Cerebrospinal Syphilis from Laboratory Standpoint. E. W. Willetts, Pittsburgh.

119. **Syphilis Treated by Swift-Ellis Salvarsanized Serum Method.**—Experience leads Wholey to conclude that intravenous administration as a routine practice, does not give the results, in cases of spinal fluid infection, that are obtained by the Swift-Ellis method. Though in certain cases the intravenous treatment may prove efficacious, it is almost always slower, requiring a greater amount of salvarsan; frequently it fails entirely to reach the seat of infection. This frequent failure of intravenous salvarsan to reach the seat of the disease, and the necessity therefore for the intraspinous, or Swift-Ellis method, is explained by a glance at the path of transmission through which the drug probably reaches the central nervous system. Under normal conditions the spinal fluid is, almost wholly, a product of the secretory function of the choroid plexuses. It follows that whatever substance is introduced into the spinal fluid by way of the blood stream must pass through this gland. This gland being a vascular fold of the pia, a meningeal membrane, becomes itself a seat of inflammation, and its normal function thus becomes crippled or abolished.

Wholey sounds a note of warning as to the careless and indiscriminate use of salvarsan therapy. There seems to be a notion prevalent that the handling of these cases is a simple matter; that treatment means but a routine, perfunctory administration of certain amounts of given specific. The facts are that we are dealing with a powerful therapeutic agent, the amounts of which must necessarily be carefully controlled, and adapted to each individual case. There have been enough cases carefully and scientifically handled to lead to the belief that it is a most efficacious as well as safe remedy for syphilis if rightly used. Wholey concludes by stating that no physician unable, or unwilling, to make careful note of the finer mental shadings, and the delicate, often obscure, neurologic changes indicative of the progress or trend of the disease, and to see that the technic of the administration is all that is desirable, has any right to take into his hands the responsibility for the use of this remedy.

Public Health Journal, Toronto

February, VI, No. 2, pp. 53-100

121 Home Hospital. W. P. Capes, New York.
122 Instruction and Choice of Suitable Nurses for District Work in Home, Tuberculosis and Infant Welfare Departments. M. A. MacKenzie.

South Carolina Medical Association Journal, Anderson

February, XI, No. 2, pp. 35-68

123 Homeopathy. A. L. Smethers, Anderson.
124 Surgery of Pus Tubes. R. T. Ferguson, Gaffney.
125 Ophthalmia Neonatorum—Prevention and Cure. G. A. Neuffer, Abbeville.
126 Plea for Early Diagnosis and Treatment of Perforations of Intestines in Typhoid. Report of Four Cases. S. E. Harmon, Columbia.
127 Renal Function in Conjunction with Ureteral Catheterization. W. R. Barron, Columbia.
128 Some Diagnostic Evidence Showing that Exploratory Operation on Genito-Urinary System is Never Justifiable; or even Allowing Permanent Invalidism of These Organs is Very Rarely Excusable. M. H. Wyman, Columbia.

Wisconsin Medical Journal, Milwaukee

February, XIII, No. 9, pp. 333-382

129 Are Physicians Square with Their Tuberculosis Patients? H. E. Dearholt and C. M. Cheadle, Milwaukee.
130 Case of Hypophysaire Adiposogenitalis with Polyglandular Manifestations. F. C. Studley and J. M. Conroy, Milwaukee.
131 Mongolism. A. L. Beier, Chippewa Falls.
132 Fluorescent Screen in Medicine and in Surgery. E. A. Smith, Milwaukee.
133 Should State Make Wassermann Examinations at Nominal Fee? W. F. Lorenz, Mendota.
134 Two Interesting Letters Concerning Causes of Cholera, as Understood in 1849. J. H. Voje, Oconomowoc.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

February 20, I, No. 2825, pp. 321-364

1 Gunshot Wounds of Head. V. Horsley.
2 *Wassermann Reaction in Ophthalmic Practice. W. H. Manson, T. J. Mackie and H. E. Smith.
3 *Dupuytren's Contraction. K. Black.
4 Popliteal Aneurysm in Girl: Matas' Restorative Operation. J. L. Dunlop.
5 Sliding Hernia. H. R. Unwin.
6 Insects and War; Mosquito. A. E. Shipley.
7 *Value of Salicylic Acid in Treatment of Wounds and Typhoid. A. Wilson.
8 Treatment of Trichiasis by Means of Roentgen Rays. C. Kempster.

2. **Wassermann Reaction in Ophthalmic Practice.**—Excluding such conditions as ocular injuries, conjunctivitis, cataract and the ordinary errors of refraction, if all other ocular affections without selection are analyzed on the basis of the Wassermann test, the authors found that practically 50 per cent. of these collectively are associated with a positive reaction. Since many of such lesions occur in the tertiary and latent stages of syphilis in which only a certain proportion yield a positive result, they believe it is a justifiable presumption that this is probably an underestimate, and that syphilis plays an even more prominent part in the production of ocular disease than their figures show. They are strongly of opinion that, apart from the previously mentioned conditions (injuries, etc.), all cases presenting themselves at an eye clinic should be submitted to the Wassermann test; if this were carried out systematically the clinician would have at his disposal direct evidence which would be of great value in respect to effective treatment, and in a very large number of cases clinical inference would be converted into practical certainty. Moreover, certain etiologic obscurities might be definitely resolved as the result of such systematic and extensive investigations.

3. **Dupuytren's Contraction.**—Black suggests that the true cause, or at least the principal cause, of Dupuytren's contraction will eventually be recognized to be a certain internal condition (possibly akin to a gouty or rheumatic condition) among persons of advancing age.

7. **Value of Salicylic Acid in Treatment of Typhoid.**—In typhoid Wilson suggests the use of 3 to 5-grain doses of salicylic acid given with milk, so as to be carried more quickly into the bowel, or in suspension with bismuth and mucilage. The effect of excessive dosage in normal individuals is a slight diarrhea with dryness of the evacuations. In typhoid this would not give rise to any complication nor depression. For wounds he urges the use of salicylic acid as a first dressing on the field, to be applied by the patient or his comrades. A convenient method would be pads of salicylic wool between layers of gauze after the style of gamgee tissue. In hospitals it could be dusted on from an ordinary perforated container. Apart from its convenience and easy application, salicylic acid has special advantages over phenol or iodin. The former is hardly reliable under 5 per cent., while 2 per cent. iodin besides being painful, has a doubtful and unproved reputation, and may lead to sloughing in damaged tissues. Security is obtained by 0.5 per cent. salicylic acid, while antisepsis actually occurs at 0.2 per cent. or 1 in 500. The fresh serum being alkaline, takes up the full dose of salicylic acid, as that the threshold of invasion is constantly bathed in a protecting antiseptic.

Dublin Journal of Medical Science

February, III, No. 518, pp. 81-160

9 Failure of Vaccination Acts. T. P. C. Kirkpatrick.
10 Therapeutic Action of Normal Horse Serum. J. T. Simpson.

Journal of Hygiene, London

January, XIV, Supplement, pp. 683-792

11 Epidemiologic Observations in Madras Presidency. J. C. Kunhardt and Others.
12 Vaccination Against Body-Strain of Plague. S. Rowland.
13 Immunization by Pseudotubercle. S. Rowland.
14 Immunization by Living Avirulent Cultures (Strong). S. Rowland.

15 Influence of Race on Efficiency of Antigen. S. Rowland.
16 Failure to Vaccinate Against Virulent Body-Strain Even with an Antigen Prepared as Far as Possible under Body Conditions. S. Rowland.
17 Protective and Curative Value, Against Infection with Serum Race of Plague, of Serum of Horse Immunized with Nucleoprotein Extracted from Strain of Plague Bacilli Propagated on Serum Protein. S. Rowland.
18 Ultraviolet Light as Germicide in Preparation of Plague Vaccine. S. Rowland.
19 Length of Time that Fleas (Ceratophyllus Fasciatus) Carrying Bacillus Pestis in Their Alimentary Canals are Able to Survive in Absence of Host and Retain Power to Reinfect with Plague. A. W. Bacot.
20 Mechanism of Transmission of Plague by Fleas. A. W. Bacot.
21 Development of Bacillus Pestis in Bugs (Cimex Lectularius) and Their Power to Convey Infection. A. W. Bacot.

Journal of Obstetrics and Gynecology of British Empire, London

September, XXVI, No. 3, pp. 129-176

22 Speculum Matricis. A. Doran.
23 Pelvic Inflammation. F. A. L. Lockhart.
24 Hemorrhage into Ovary Associated with Severe Dysmenorrhea. B. Whitehouse.
25 Malaria as Complication of Puerperium. B. Solomons.
26 Case of Bilateral Duplication of Ureters Complicating Operation for Cancer Cervix Uteri. R. Worrall.
27 Hydronephrosis Developing Suddenly Twenty-One Days after Laparotomy for Large Pyosalpinx. Nephrectomy. V. B. G. Armytage.

Journal of Pathology and Bacteriology, London

January, XIX, No. 3, pp. 305-455

28 *Cellular Reactions Induced by Local Deposits of Cholesterin in Tissues. M. J. Stewart.
29 Antagonistic Relations Between Trypanosomes and Blood Elements. H. Seidelin.
30 Pathology of Yellow Fever in Guinea-Pigs. H. Seidelin.
31 *Symmetric Cortical Necrosis of Kidney in Pregnancy. E. E. Glynn and H. Briggs.
32 Primary Cancer of Liver Occurring in Sheep. R. Donaldson.
33 Division Forms of Parasites in Organs of Guinea-Pigs Infected with Paraplasma Flavigenum. H. Seidelin.
34 *Histology of Thyroid in Animals Fed on Various Diets. M. Douglas.
35 *Lipoids in Immunity. F. H. Thiele and D. Embleton.
36 *Mechanism of Antibody Action. F. H. Thiele and D. Embleton.
37 *Criteria of Virulence Among Streptococci; Streptococcal Leukocidin. J. W. M'Leod.
38 *Retention of Iron in Organs in Hemolytic Anemia. R. Muir and J. S. Dunn.
39 Detection and Estimation of Bacterial Indol and Observations on Intercurrent Phenomena. F. C. Lewis.
40 *Experimental Scarlet Fever in Monkey. W. Mair.

28. **Cellular Reactions Induced by Cholesterin.**—Crystallin cholesterin, Stewart says, is deposited in the tissues in various forms and under various pathologic conditions. Deposits of the tabular crystals give rise, in paraffin sections, to a very characteristic appearance, namely, that of "cholesterin clefts." When the deposits occur in the midst of the living connective tissues, they give rise to a very special cellular reaction, characterised by the presence of numerous "foamy" endothelial cells, and by varying numbers of giant cells of the foreign-body type. This giant-cell reaction is generally induced by the tabular form of cholesterin, but in some inflammatory breast lesions with retentions of the secretions, acicular cholesterin is deposited within the dilated ducts, and lead to the formation of very striking and characteristic "giant cell rosettes." Appearances point to the giant cells being derived from the endothelial cells; in part, at least, by a process of fusion. Cholesterin must therefore be regarded as a very potent and widely acting stimulant to the formation of foreign-body giant cells in human pathologic processes.

31. **Necrosis of Kidney in Pregnancy.**—Typical symmetric cortical necrosis of the kidney, according to Glynn and Briggs, is apparently invariably associated with pregnancy. Thirteen cases have been recorded. The lesion is due to thrombosis of the interlobular arteries, their afferent branches and glomerular capillaries, and begins in the distal ends. In their cases the thrombi in the distal ends and middle of the interlobular arteries, their branches and glomerular capillaries consist mainly of platelets; fibrin is relatively scanty and in filamentous form. The thrombi in the proximal ends of these vessels consist mainly of fibrin in hyaline form; many erythrocytes and leukocytes are also present; platelets are very scanty. It is extremely probable that platelets formed the chief portion of the thrombi in other recorded cases, but their presence was overlooked. The deposition of platelets was the primary cause of the thrombus and preceded the deposition of fibrin. It was the result of injury to the vascular endothelium. This injury was probably caused by an endotheliolytic toxin allied to the group of toxins in pregnancy which may produce eclampsia. A variable amount of sclerosis of the renal arteries occurred in six of the thirteen cases. It probably predisposed to thrombosis by causing slowing and other irregularities in the circulation, or by injuring the endothelium or rendering it more susceptible to injury.

34. **Histology of Thyroid in Animals.**—No characteristic appearances in the pigeon in the condition of beriberi were found by Douglas. In pigeons fed on polished rice, the tendency is for the disappearance of colloid from the vesicles of the thyroid. These animals, are, for the most part, not so well nourished as normal birds. The histologic appearances do not represent different stages of secretion, comparable to those on secreting glands engaged in the process of digestion. Under similar conditions and in animals fed on similar diets, the appearances in the thyroid differ very markedly. One observes all stages from the type with large vesicles, full of colloid with flattened cells, to that of a thyroid with no colloid and columnar-shaped cells. Also the thyroid may be wholly or partially disintegrated. The variation, in appearance, of the thyroid, Douglas states, seems to depend to some extent on the nutrition, and is thus only in this way dependent on the diet.

35. **Lipoids in Immunity.**—Thiele and Embleton believe that the hemolytic power of a serum bears no relationship to its lipolytic power. A hemolysin is not a lipase. Antibodies cannot be provoked against the ordinary tissue fats, lipoids or phosphatids. The phosphatids of the tubercle bacillus can, however, provoke antibody formation. Those produced are: Precipitins, Bordet gengou; anaphylactic antibodies. These are not strictly specific, but react not only with the specific antigen, but with the whole or lipoid-free antigen from which the phosphatid was obtained. Guinea pigs can be rendered actively hypersensitive to the phosphatids of the tubercle bacillus by a previous inoculation with those phosphatids. Such animals are also somewhat hypersensitive to the proteins of the tubercle bacillus, and vice versa guinea pigs sensitized with tubercle protein react mildly with the bacillary phosphatid. The symptoms and mode of death occurring on the reinoculation of such hypersensitive animals are identical with those occurring in acute protein anaphylaxis.

36. **Mechanism of Antibody Action.**—That the activity of complement depends solely on its concentration, not on the total amount exhibited, is the opinion held by Thiele and Embleton. This holds all through when the antigen has been sensitized with only one dose of antibody. When, however, the antigen has been sensitized with several doses, the above holds after a certain degree of dilution. This degree of dilution varies with the amount of an individual antibody. Amboceptor combines quantitatively with its homologous antigen, and its activity does not depend on its concentration. Increasing amboceptor diminishes to a certain degree the complement concentration necessary to produce complete lysis. Above a certain amount, increase in the amount of amboceptor does not diminish the necessary complement concentration. It, however, greatly accelerates the rate of the reaction. In addition to requiring a certain concentration, complement must also be present in a certain minimal amount. It thus frequently occurs that the amount of complement necessary to produce complete lysis is the same in dilutions of 1, 2, 3 and more cubic centimeters. Study of the curves of complement activity shows that they are like those of enzyme action. With increasing concentration of the antigen more complement is necessary to produce complete lysis in standard time. This is opposed to the results of Scheller. The necessary increase is at first small, a fraction of the original unit; later, the increase with each successive dose of antigen is much greater, and ultimately becomes greater than, and a multiple of, the original unit.

37. **Criteria of Virulence Among Streptococci.**—M'Leod found that among hemolytic streptococci the power to produce hemolysin in the animal body, or in cultural conditions closely resembling those met with in the animal body, is closely allied to virulence. Growth of streptococci in fresh sterile human serum and titration at the end of twelve to eighteen hours of the amount of hemolysin produced for a 5 per cent. suspension of human blood in normal salt solution would, if tried, probably afford a valuable criterion of virulence among streptococci. For the quantitative and qualitative estimation of hemolysin production by streptococci the blood agar plate is unreliable and should give place to titration of the minimum hemolytic dose of a culture of streptococci in fluid medium. Prominent biologic characteristics of strains of streptococci such as hemolysin production are most probably very constant characteristics. Actively hemolytic streptococci appear also to produce a leukocidin. Many strains of streptococcus may retain a moderate degree of virulence for the rabbit even after subculture on ordinary agar medium for two years or more.

38. **Retention of Iron in Organs in Anemia.**—In acute hemolytic anemia attended with destruction of more than half of the blood within three days, Muir and Dunn found that nearly all the iron from the destroyed hemoglobin is deposited in the liver, spleen and kidneys; a certain amount escapes in the urine when there is hemoglobinuria, and the amount deposited in the kidneys is roughly proportional to this. A third of the total iron of the blood may be deposited in the organs mentioned within twenty-four hours. With regard to the deposits of hemosiderin, a broad distinction can be made between that resulting from lysis and that resulting from phagocytosis of red corpuscles.

40. **Experimental Scarlet Fever in Monkey.**—Mair's monkey received an intraperitoneal injection of 10 c.c. of citrated blood from a severe case of scarlet fever on the fourth day of the disease. On the next day at noon the temperature had risen 2 degrees F., and it remained up till after 9 p. m. The following day it had returned nearly to the normal. Döhle's bodies were found in 55 per cent. of the leukocytes on the first day, and in 15 per cent. on the second day. After that they disappeared. A portion of the blood used for this injection was found to be sterile when tested on ordinary medium, and Mair is of the opinion that this reaction was due to a toxin in the patient's blood and not to an infection. After many failures to repeat this experiment with the blood of other patients Mair succeeded in obtaining a similar reaction by the subcutaneous injection of mouth washings from scarlet fever patients in two cases out of five. Attempts were again made to pass the infection on to other monkeys by means of cultures, and this time with success. From fluid withdrawn from a local swelling a culture on agar was obtained consisting chiefly of a large staphylococcus, but containing also numerous diplococci. In subculture this diplococcus could be grown only on serum containing medium, and not on ordinary agar or broth. Its presence in large numbers in the pus, and the fact that it appeared to be the only organism present, made it highly probable that it was the cause of the reaction.

Mair believes that it follows from his results that in the mouth washings which gave a positive reaction the diplococcus must have been present in enormous numbers, comparable to those in the cultures, and that it may very possibly have been present even in the negative cases, although not in sufficient numbers to produce a reaction. If the reaction in the monkey is really scarlet fever then, Mair says, there can be little doubt that the diplococcus in question is the cause of scarlet fever in the human subject. The direct evidence in favor of this view is the resemblance, in at least two important features, of the disease in the monkey to human scarlet fever, and the occurrence of the diplococcus in the throats of a considerable proportion of scarlet fever cases. Mair has been unable to produce the reaction in monkeys with long-chained streptococci, isolated from the blood and from the throats of scarlet fever patients. That this is not due merely to want of virulence is shown by the fact that one monkey, which received an intraperitoneal injection of a culture of a streptococcus from the heart blood of a fatal case of scarlet fever, died a week later from peritonitis without having shown any sign of the reaction.

Mair suggests the possibility that all cases of scarlet fever are not due to the same diplococcus, but what appears fairly certain at present is that there is a specific scarlet fever caused by a diplococcus with definite cultural characters, and that this scarlet fever is not caused by the ubiquitous pyogenic streptococci which are not infrequently found in its complications and even occasionally in the blood of uncomplicated cases. The almost constant occurrence of long-chained streptococci in the blood of fatal cases at the necropsy must be regarded as a terminal or even a post mortem phenomenon. Mair also believes that scarlet fever is a disease analogous to diphtheria, in cases in which the infective agent, gaining only a slight foothold in the tissues at a local focus, is able to produce a toxin which is poured into the blood. The pyrexia and exanthem and the changes in the leukocytes are the direct result of the action of this toxin, as is also probably the arthritis when this occurs. In the nephritis occurring toward the end of the third week, other factors appear to be involved which may now possibly be capable of resolution by the experimental method.

Lancet, London

February 20, I, No. 4773, pp. 359-418

41 Gunshot Wounds of Head. V. Horsley.
42 Pernasal Operation for Frontal Sinus Suppuration by Anterior Route. P. Watson-Williams.
43 *Lipemia Retinalis. R. F. Moore.
44 Operative Treatment of Bullet Wounds Involving Vertebral Canal and Associated with Complete Paralysis. L. J. J. Muskens.
45 Case of Acute Tetanus with Recovery. A. G. Whitehorne-Cole and W. M. S. Robinson.

43. **Lipemia Retinalis.**—Lipemia retinalis occurs in young diabetics who are usually bordering on coma, and it consequently implies an immediately grave prognosis, but recovery from the condition may occur. Moore says that it implies a high degree or lipemia and it is probable that in no condition other than diabetes does lipemia attain a sufficiently high degree to give rise to the appearances of lipemia retinalis. Vision may remain unaffected in spite of a very high degree of lipemia retinalis. The conspicuous changes in color and appearance of the retinal vessels are probably entirely dependent on the opacity of the plasma, and do not indicate a change in the hemoglobin. Lipemia retinalis supplies so striking and characteristic an ophthalmoscopic picture that it cannot be overlooked nor mistaken for any other condition.

Archives de Médecine des Enfants, Paris

November-December, XVII, Nos. 11-12, pp. 801-960

46 *Study of Toxic Action of Helminths. (Toxicité des ascarides lombricoides.) A. Brinda.
47 Radiography of Diseased Bronchial Glands. J. Comby.

46. **Toxicity of Ascarides.**—Brinda summarizes the literature on this subject and then describes prolonged research on laboratory animals treated with extracts of different intestinal parasites, of ascarides in particular. Nearly a hundred pages are devoted to the detailed findings in his experiments. They all testify to an extremely toxic action from the ascarides extract and also that the damage therefrom was the more pronounced the younger the organism treated with it. The toxic action was evident on the circulation, the pulse, the blood pressure, the respiration and in the pathologic-anatomic findings. The respiration acquires a tetany-like character unless the dosage is very small. This peculiarity of the toxic action is often noticed in children with large numbers of ascarides. When there are enough of them to generate large amounts of toxins, they act on the respiration centers, and extremely serious phenomena may follow. Respiratory symptoms are an important element in the clinical picture in children with helminths. The extract or juice squeezed out of ascarides has likewise a marked influence in inducing convulsions and hemolysis. Everything seems to point to an extremely active toxalbumin.

Presse Médicale, Paris

February 4, XXIII, No. 5, pp. 33-40

48 Treatment of Severe Suppuration in the Knee with or without Fracture. Chaput.
49 Every Wounded in War Should Be Given Preventive Antitetanus Serum. P. Bazy.
50 Improvised Apparatus for Electric Treatment of Wounded Nerves. J. Larat and P. Lehmann.
51 *Improvised Electric Apparatus for Locating Bullets, etc., in the Tissues. (Recherche des projectiles de guerre dans le corps humain.) J. Garel.

February 11, No. 6, pp. 41-48

52 Nerves Embedded in Cicatricial Tissue. (Sémiologie et traitement des troubles fonctionnels dus à la striction des troncs nerveux par du tissu cicatriciel dans les plaies de guerre.) P. Coryllos and R. Pecker.
53 Secondary Diffuse Aneurysmal Hematoma after Wounds in War. J. Tissot.

51. **Improvised Electric Apparatus for Locating Bullets, Etc., in the Tissues.**—Garel describes several devices for this purpose. One is an ordinary telephone receiver with two wires, one twisted around a spoon, the other around a probe. The patient holds the spoon in his mouth, the physician holds the receiver to his ear while probing for the metal in the tissue. When the probe touches the metal there is an unmistakable click. Another simple device consists of two magnetic needles, one suspended by a thread. This "astatic needle" is more reliable than the needle of a compass, he states, but the compass alone can render good service in locating a metal foreign body.

Beiträge zur klinischen Chirurgie, Tübingen

XCIV, No. 2, pp. 225-514

54 Liver Abscess as Complication of Acute Appendicitis; Eighteen Cases. G. Petren.
55 Appendicitis: Differentiation, Complications and Local Anesthesia. Rittershaus.
56 Appendicitis in Children: Ninety-Eight Cases. Rittershaus.
57 *Spontaneous Rupture of the Tendons in the Fingers. W. Weigeldt.
58 Ossification in Connection with Goiter. (Ossifikation in kropfendemischen und kropffreien Gebieten.) E. Heller.
59 *Relations between Ovaries and Parathyroids. (Zur Frage der Beziehungen zwischen Ovarien und Epithelkörperchen.) M. Meyer.
60 Heliotherapy of Surgical Tuberculosis without Mountain Climate. H. Schmerz.
61 Restoration of Nose by Italian Method. (Zur Rhinoplastik.) Steinthal.
62 Experiences in Four Hundred Operations on the Thyroid. (Wundbehandlung, Wundverlauf und Wundfieber bei 400 Kropfoperationen.) A. Steinegger.

No. 3, pp. 515-646

63 Restoration of Nose. (Nasenplastik.) F. König.
64 Operation for High Shoulder. (Eine neue Operation des angeborenen Schulterblatthochstandes.) F. König.
65 *Operation to Relieve Pressure from Mediastinal Tumors. F. König.
66 *Implantation of Soft Parts in Resection of Joints. (Zur Frage der Weichteilimplantation bei Gelenkresektionen.) F. Hohmeier and G. Magnus.
67 *Splint Treatment of Club-Foot. (Klumpfussbehandlung mit bipedaler Schiene.) G. Magnus.
68 Superficial Blastomycoses. (Hautblastomykosen.) H. Kehl.
69 *Ivory for Repair of Bone. (Ueber Elfenbein in der Osteoplastik und über Elfenbein- und Horneinheilung.) von Kamptz.
70 *Hemostasis. (Ueber die Blutstillung.) T. Ohkohchi.

57. **Spontaneous Rupture of Tendons in the Fingers.**—Weigeldt's first patient was a carpenter of 26 who had been out of work for over a year. Then he had work in sawing and kept at the saw for three days. After his long rest he found it hard work, and he noticed that his right wrist had swollen. He kept on working and the swelling subsided, but two days later he had a feeling as if something had broken in his hand, but there was very little pain although he could not stretch his thumb. A physician treated him with local massage and baths but without relief, and two weeks later the surgeon confirmed the diagnosis of rupture of, and performed a successful plastic operation on, the tendon. In a second case a woman of 35 tore the tendon across in a fall in which the radius was fractured. In a third case the tendon was not entirely severed but an operation was required. The outcome in the three cases was excellent. The literature on the subject is compared with the history of his three cases.

59. **Relations Between Ovaries and Parathyroid.**—Meyer's experimental research fails to confirm Silvestri's statements in 1910 that adult female cats, dogs and rabbits escape tetany after removal of the parathyroids if they previously have been castrated, while tetany develops in young animals of both sexes, whether or not they have been previously castrated. In Meyer's experiments all the female dogs developed fatal tetany after parathyroidectomy, regardless of age or previous castration. This evidence disproves an antagonism of the kind assumed by Silvestri between the ovaries and parathyroids.

65. **Decompressive Operation for Tumor in the Chest.**—König reports the case of a man of 33 with large tumors on both sides of the neck, encircling the neck and extending down into the chest. One was excised and proved to be malignant lymphoma. The tumors had been developing for eighteen months; when the cyanosis and dyspnea became unbearable, König slit the sternum from top to bottom and introduced two ivory wedges to hold the gap open. The ivory wedge was shaped something like a broad square spool, the inner end a little narrower. The cut edges of the sternum were hollowed out a little to hold the wedges in place. The relief was immediate and pronounced. He emphasizes that the ivory implant must be wrapped or embedded in soft parts for it to heal in place. The sternum was drilled in the center and from this hole it was cut upward and downward with a small Jansen's bone forceps.

66. **Interposition of Soft Parts in Resection of Joints.**—Hohmeier and Magnus report further experiences which sustain their former assertion that the healing and functioning of animals' joints after resection is not modified by interposition of soft parts. The clinical course and the ultimate outcome seem to be different from those of similar operations on man, animals apparently being able to do without the interposed soft-tissue flap which is proving so useful in the clinic.

67. **Bipedal Splint for Club-Foot.**—Magnus has been much pleased with the results of bandaging both feet on a single board in correction of club-foot. When both feet are deformed, the two can be thus maintained in extreme correction until the deformity is overcome. When only one foot is deformed, the other can be fastened to the board in its normal position. The feet can be held in position on the board with adhesive plaster or with a plaster cast for each foot, including the part of the board below in each cast. The results are seen to be most excellent in the two cases illustrated before and after, especially in the case of an infant of 5 months with feet in normal position after a five months' course of treatment.

69. **Ivory Implants.**—Von Kamptz gives twenty-four illustrations in the text and three colored plates to show what becomes of an ivory or horn implant in the tissues. The work was done at König's clinic at Marburg. All the facts observed testify that ivory has a peculiar action on the tissues, stimulating bone growth, which gnaws at the ivory and grows into its place. In soft parts, a capsule of connective tissue develops around it, within which the ivory persists unmodified. It does not stimulate the periosteum to grow, and hence its special field is to serve as a support and bridge, the ivory peg being implanted with an end in the bone marrow above and below. This stimulates the production of new bone and guides it in the proper channels.

70. **Means to Arrest Hemorrhage.**—Ohkohchi reports experiments with various kinds of tissues to test their hemostatic power. He found that the mechanical arrest of hemorrhage by fascia or muscle is more effectual with muscle tissue as it fits better against the bleeding surface. Fat tissue acts still better, but omental tissue supplements the passive mechanical action with an active clinging to the bleeding surface. Disturbing adhesions seem to develop most frequently with muscle flaps. Great damage is wrought whenever either of the surfaces in contact develops necrosis. This occurred in his experiments most frequently with muscle flaps, and least with omentum. On the other hand, proliferation of connective tissue was most pronounced with pedunculated omentum flaps. All the advantages of the above, he adds, can be secured, with none of their disadvantages, by

using a slice of sea sponge. It arrests the bleeding mechanically, it is gradually absorbed, and it does not seem to irritate the environment, that is, minimal adhesions form later and the parenchyma of the organ does not degenerate. Granulation tissue rapidly invades the porous sponge by the second day, and soon development of polynuclear giant cells at the point of contact is evident.

Berliner klinische Wochenschrift

February 1, LII, No. 5, pp. 97-120

71 *Latent Infection as Affecting Surgical Measures. (Begriff der ruhenden Infektion in seiner Bedeutung für die Chirurgie.) E. Melchior.
72 The Potato. (Die Kartoffel als Volksnahrungsmittel.) P. F. Richter.
73 Value of Quinin in Pneumonia. Aufrecht.
74 *Study of the Functional Capacity of the Stomach. (Untersuchung des Magens mittels Sekretionskurven.) Skaller.
75 Normal Standards of Weight. (Zur Frage der konstitutionellen Fettsucht.) G. Oeder.
76 Technic for Making Fenestrated Plaster Casts. (Gipsverbände.) H. Schaefer.

71. **Latent Infection.**—Melchior reports a number of experiences which teach that when a phlegmon, a focus of osteomyelitis, or a suppurating glandular process heals, this is by no means equivalent to a complete cure in the bacteriologic sense. The infection has merely subsided into an inactive stage, a partial immunity. The germ of a recurrence or metastasis is already installed. The conception of a "resting infection" throws light on many cases of so-called predisposition or diathesis, and it also is suggestive for estimation of the effects of trauma.

74. **Improved Technic for Study of Stomach Secretion.**—Skaller declares that the technic he advocates enables the secretory functioning to be charted, the curve thus showing the condition much more instructively than the usual methods in vogue. He uses a retention tube like the duodenal tube, with a metal capsule, and, for the test fluid, 5 gm. of Liebig's meat extract in 200 c.c. water. This is obtainable everywhere, is thin, so it can be easily pumped out, and exerts a marked stimulating action on the secreting glands. To aid in estimation of the motor functioning, he adds 25 drops of phenolphthalein to the fluid. This does not modify the secretion but the findings show when the stained fluid has left the stomach. The production of mucus in the stomach is rendered evident by the mucus content of the thin fluid pumped out of the stomach. The work-curves drawn from the findings thus record in turn the secretion of gastric juice, the motor functioning of the stomach, and the proportion of mucus produced. He gives no details of the actual technic. His previous communication on the subject was briefly summarized in THE JOURNAL, Jan. 10, 1914, p. 168.

Jahrbuch für Kinderheilkunde, Berlin

January, LXXXI, No. 1, pp. 1-95

77 *Aplastic Hemolytic Anemia in Children. H. Kleinschmidt.
78 Pathology and Treatment of Chronic Internal Hydrocephalus. J. v. Bokay.
79 Three Cases of Exfoliative Dermatitis of the New-Born in the Same Family. S. v. Ujj.
80 Lordotic Albuminuria Due to Mechanical Causes Plus Local and General Predisposition. (Lordotische Dispositionsalbuminurie.) R. Fischl and E. Popper.
81 *Chronic Articular Rheumatism in Children. J. Westmeyer.

77. **Hemolytic Anemia in Children.**—Kleinschmidt describes four cases of a form of anemia in children, between 4 and 12, at Berlin. It is characterized by hemolysis in the blood itself and failure of the bone marrow to produce new cells. The red cell count is considerably increased, but there are no special changes in the shape of the cells. There is neither megalocytosis, poikilocytosis or polychromatophilia; there are no basophile granules; erythroblasts were not found except in one case, and then only a few. The color index is generally lower than 1. The character of the white cells is not changed, but they are decreased considerably in number, especially the polymorphonuclears, so that there is a relative lymphocytosis. There are no eosinophils; the number of blood platelets is greatly decreased. The anemia generally ends fatally in from six to nine months; one case lasted for a year and nine months. There are no remissions in the disease and all attempts at treatment have failed, including iron and arsenic treatment and blood transfusion.

One of the most striking things about the disease is the pronounced tendency to hemorrhages in the skin, mucous membranes and internal organs. There is a slight yellowish tinge to the skin, but not the straw yellow of pernicious anemia. Neither urobilin nor urobilinogen could be demonstrated in the urine. While many of the clinical symptoms are similar to those of pernicious anemia, the blood picture is decidedly different. Neither the blood picture nor the clinical findings alone are pathognomonic of a blood disease, but the combination of the two is. So this may be considered an entirely separate disease of unknown toxic origin.

81. **Chronic Rheumatism of the Joints in Childhood.**—Westmeyer gives the histories of five cases of chronic rheumatism in young children. The disease began with a more or less pronounced chronic fever, with swelling of the glands in the neck. The joint swelling began almost imperceptibly; gradually tumor-like swellings of the joints appeared and in three of the cases they became so severe that there was spontaneous luxation of the hip. The site of election was the vertebrae in the neck and the large joints. Often in cases of this kind there is a remittent fever of varying degree for years; the joint disease increases in intensity only very gradually. In one of the cases with few symptoms the jugular glands enlarged and there was stiff neck. After six months this subsided, but later there was a second attack; only after almost complete recovery from this did the disease appear in its typical form. In this case it seems probable that the body was able to overcome the disease twice, but succumbed the third time. In two cases there was complete spontaneous recovery after the disease had persisted for several years. There was even spontaneous reposition of a dislocated hip joint.

There is no doubt that this is an infectious disease and that the portal of entry for the infection, as in acute articular rheumatism, is the upper air passages. The heart is involved in both conditions, but less frequently in the chronic form. The difference in the mode of onset of the acute and chronic forms may be due to the fact that they are caused by a different agent, or that children react differently. There were signs, not very pronounced, of exudative diathesis in all these patients. In all his cases this primary chronic joint rheumatism began before the child was 5 years old. Some cases recover spontaneously. The ordinary medical measures for acute rheumatism have no effect. The most effective treatment is hot baths of the joints followed by massage and active movements.

Medizinische Klinik, Berlin

January 31, XI, No. 5, pp. 121-148

82 The Sanitary Officer on Duty with the Troop. (Erfahrungen eines Truppenarztes.) E. Stadler.
83 *Treatment of the Wounded from the Orthopedic Standpoint. A. Ritschl. Concluded in No. 6.
84 *Infection of Wounds. (Extremitätenverletzungen mit bes. Berücksichtigung der Infektion.) J. Petermann and W. Hancken.
85 *Meatless Days. (Fleischlose Tage.) C. A. Ewald.
86 *Hematuria. A. Seelig.
87 *Early Physical Symptoms of Dementia Praecox. E. Breiger. Commenced in No. 4.

February 7, No. 6, pp. 149-178

88 *Measures to Ward Off and Eradicate Typhoid. (Typhusverbreitung und Typhusbekämpfung im Felde.) Uhlenhuth and others.
89 Prevalence of Phlegmons at Point of Anticholera Inoculation. (Choleraimpfphlegmonen.) F. Dedekind.
90 *Diabetes in the Elderly. (Der Diabetes der Alternden.) E. H. Kisch.
91 Milk in Medical Practice. (Die Milch in der ärztlichen Praxis.) Disqué.
92 Carbon Tetrachlorid Non-Inflammable Substitute for Benzin. Krummacher.

83. **Orthopedic Principles in Treatment of the Wounded.**—Ritschel emphasizes the necessity for being inspired by orthopedic principles in treating the wounded even from the very first day. He insists that every medical man should be trained in massage. Massage or other means to stimulate the circulation is indispensable in practically every case after the second or third day, but strict individualization is required, constantly keeping in view the ultimate wage-

earning capacity. The taxes of the future, he remarks, will rise and fall with the manner of treatment of the wounded from the very first.

84. **Infection of Wounds.**—The experiences with 1,218 wounded in August and September have materially modified the views of Rotter and his assistants. Whereas their former point of view was conservative, they now regard more radical operative treatment as often necessary. They think that mixed infection favors development of tetanus. All the tetanus patients died when the incubation was less than eleven days.

85. **Meatless Days.**—Ewald suggests that the practice of refraining from meat on a certain day of the week, like that of certain religious bodies, should be made a regular custom in state institutions, hospitals, barracks, etc. This would represent an immense saving in the consumption of meat, and experience has shown that a day without meat once a week, and change to other foods, results in a distinct hygienic gain as a rule.

86. **Hematuria.**—Seelig comments on the often insuperable difficulties in determining the source of the bleeding when the cystoscopic findings are negative. Only by combining several of the functional tests is it possible to determine which of the kidneys is at fault. Even this fails if the kidney trouble is in an early stage; calculi, tumors and tuberculosis do not modify kidney functioning appreciably until considerable damage has been wrought.

87. **Physical Symptoms of Dementia Praecox.**—Breiger found that the only pathognomonic symptom in the incipient stage was what he calls the characteristic psychic defect, namely, the "autismus" of the patient, the way in which he shuts out the physician from his thoughts and impulses. With all other patients the physician sooner or later establishes a sympathetic relation (*der psychische Konnex*) which is of great assistance in treatment and management of the case. But this is seldom or never possible with dementia praecox. The lack of the normal play of the pupils is characteristic; it is more and more common the farther advanced the disease, but is sometimes noted from the very first. Vasomotor disturbances, algesia and various reflexes were pronounced in all but 5 or 7.2 per cent. of his cases, and these symptoms were the more intense the livelier the patient. When the patient was apathetic these symptoms were correspondingly attenuated.

88. **Eradication of Typhoid.**—Uhlenhuth remarks that war may be regarded as an epidemic of trauma, but epidemics among the troops caused by micro-organisms are liable to be deadlier than the bullets. He reports with much satisfaction the way in which typhoid seems to be practically stamped out among the German troops although in October it had acquired quite a foothold. He gives an outline of the examination of each town they reached, thirty-nine directions being systematically followed in each community thus investigated to learn the prevalence of typhoid sick and carriers. The first of the directions states that what the laity call typhoid, mucous, gastric, and "bad" fever, cerebral congestion and meningitis, must all be regarded as suspicious of typhoid, and be handled accordingly. A weekly house-to-house census and inspection were instituted, chalking numbers on the houses according to the best modern city plans, and investigating the history of sickness in each house as far back as the inmates could remember, and enquiring about the neighbors also. Blood for examination is then taken from all who are found sick or have been sick or suspected of sickness since 1911. Stool and urine tests are also made from all the persons in the house wherever there is or has been a case suspicious of typhoid. These tests are repeated weekly for all who have or have had typhoid. The map of one place is reproduced; four typhoid cases were found and seventy-five typhoid houses. The disease had been endemic since 1858. Numbers of healthy carriers were found, and instances are known in which war refugees from places where typhoid is endemic spread the disease, or refugees passing through an endemic focus contracted typhoid and spread it as they passed on.

Minute directions are given for the search for the sick and for carriers, for notification and for isolating the sick and the carriers in special quarters. Under the conditions of war the town can thus be cleaned up, so far as typhoid is concerned, with a thoroughness and dispatch scarcely possible in times of peace. But when the troops are constantly changing their position, the task of protecting them against typhoid is a much more difficult matter. Antityphoid inoculation is thus the main resource. The German troops have all been inoculated against typhoid. Contact infection was found responsible for 4,202 cases of typhoid in the area in southwestern Germany where a systematic campaign has been carried on in recent years to eradicate this disease. Only 399 cases were traced to water and 309 to milk.

90. **Diabetes in the Elderly.**—Kisch refers to the cases in which sugar is discovered in the urine of men or women of about 55, apparently healthy hitherto, hearty eaters without corresponding physical exercise. In his experience, about 15 per cent. of the persons with this alimentary corpulence develop diabetes, and about 50 per cent. of those with pronounced constitutional obesity develop it. Children with a congenital tendency to obesity nearly always develop diabetes sooner or later in life. Thus when diabetes develops after 55, it is generally in those inclining to acquired obesity. The course of the diabetes is mild and slow; the disturbances slight, and the tolerance for carbohydrates is fair and may improve in time. After the first abrupt loss of flesh, the weight persists about the same. The sugar content of the urine ranged from 0.11 to 6.76 per cent. in Kisch's cases of this kind; there were sometimes traces of albumin, but in only a few did it reach 0.11 to 0.51 per cent.

The diabetes very rarely runs a severe course; one of his patients lived to be 90. The danger of complications, however, is always imminent. Dietetic restrictions should not be too strictly enforced, but the tolerance should be constantly supervised, always bearing in mind that the keeping up of the health and strength is the main object, avoiding "milk days" and weakening measures as liable to add to the depression. Diabetics of this bon-vivant type do better in their own comfortable home than elsewhere, except for an occasional agreeable and comfortable change of scene, a course of mineral waters or baths, especially natural carbonated baths. If complications develop requiring dietetic restrictions and treatment, a course at some sanatorium making a specialty of dietetic treatment may prove useful.

Münchener medizinische Wochenschrift, Munich

February 2, LXII, No. 5, pp. 145-176

93 *Systematic Percutaneous Immunization on Large Scale. (Zur weiteren Nutzbarmachung der perkutanen Immunisierung.) J. Petruschky.

94 Differential Diagnosis of Membranous Croup by Auscultation of the Larynx. (Das Auskultationsphänomen des Kehlkopfes beim Krupp und Pseudokrupp.) A. Levinson (Chicago).

95 "Copper Salvarsan" in Treatment of Syphilis and Lupus. J. Fabry and J. Selig.

96 Universal Measuring Tube for Elements in the Urine. R. Weiss.

97 Alcohol and Crime. (Die Alkoholkriminalität in Bavaria im Jahre 1913.) L. Rupprecht.

98 Wounds with Fracture of Long Bones. (Schussfrakturen langer Röhrenknochen und ihre Behandlung in den Heimatlazaretten.) H. Els. Concluded in No. 6.

99 The Question of Splints. (Papphülsenchienen.) F. Lange and F. König.

100 *Mechanical Treatment of Angular Deformities. (Mechanische Behandlung winkliger Formabweichungen des Skeletts.) A. Ritschl.

101 *Wounds of the Spinal Cord. (Rückenmarksschüsse und Behandlung der im Gefolge der Laminektomie auftretenden Meningitis.) R. Klapp.

102 Advantages of Early Cystostomy in Treatment of Wounds of the Spinal Cord. (Zur Behandlung der Rückenmarksverletzungen im Felde.) H. Schum.

103 Wounds of the Urinary Passages. K. Kolb and A. Mueller.

104 Directions for Transportation of the Wounded. (Anweisung an Aerzte und Krankenpfleger bei Transporten von Verwundeten.) G. Lennhoff.

93. **Tuberculosis Entirely Stamped Out in a Community.**—The Journal has already mentioned Petruschky's success in eradicating tuberculosis from Hela, a village on a peninsula near Danzig. This was accomplished by systematically immunizing the populace in the simplest way, namely, by percutaneous tuberculin treatment. All the tuberculous with

"closed" or latent disease seem to be entirely cured, and no new case of open tuberculosis has developed since 1911 among the 500 souls in the place. The experience here can be duplicated anywhere, he declares, if perseverance and system can be counted on. The expense is trivial. The completeness of the cure in the formerly tuberculous villagers is shown by the number of such now in active military service at the front. He has been combining with the tuberculin some antigens against other infection, and is confident that there is a future for this mixed immunization by inunctions.

100. **Correction of Deformity.**—The mechanical principle involved in the apparatus described is that very strong pressure can be exerted on a hump, for example, by passing a band across it and around two supports below it on each side, and then buckling the ends of the band together over the hump. The supports each side are supplied by a metal-reenforced plaster cast. A large window is cut out over the hump, and also on the part of the cast opposite this point. The double windows permit constant oversight of the amount of correction realized.

101. **Treatment of Meningitis Following Operations on the Spine.**—Klapp's success in two cases justifies him in advocating prompt and repeated lumbar puncture to ward off and treat postoperative meningitis. To prevent the meningitis from extending into the head, he applied a constricting band to the neck, Bier's stasis hyperemia. In the two men thus treated the meningitis followed laminectomy for a gunshot wound of the spinal cord, and the men recovered from the meningitis and no acute decubitus developed.

Wiener klinische Wochenschrift, Vienna

February 4, XXVIII, No. 5, pp. 113-140

105 Wounds of the Spinal Cord in War. (Rückenmarkschüsse.) O. Marburg and E. Ranzi.
106 Local Injuries from Cold. (Erfrierungen.) R. Volk and G. Stiefler.
107 Wound of Lower End of Spinal Cord. (Schussverletzung der Cauda equina.) E. Gamper.
108 Fever Reactions Induced by Filtrable Virus. H. Fischer.
109 Vaccine Therapy of Typhoid. R. Paltauf and others.

Zentralblatt für Gynäkologie, Leipzig

February 6, XXXIX, No. 6, pp. 81-96

110 Vaginal Fibromyomas. (Muskel-Bindegewebsgeschwülste der Vaginalwand.) A. Giesecke.

Gazzetta degli Ospedali e delle Cliniche, Milan

February 4, XXXVI, No. 10, pp. 145-160

111 Chylous and Chyliform Effusions. E. Fubini.
112 The Suprarenal-Genital Syndrome. L. Dozzi.

February 7, No. 11, pp. 161-176

113 When Can the Syphilitic Marry Safely? (Il matrimonio tra sifilitici.) Vasoin.
114 The Pathology from Tobacco. (Tabagismo.) C. S. Materazzi.

Policlinico, Rome

February 7, XXII, No. 6, pp. 185-220

115 Spasmodic Pain in the Testicles and Cord. (Il dolore testicolo cordonale.) A. Campani.

Brazil-Medico, Rio de Janeiro

January 8, XXIX, No. 2, pp. 9-16

116 The Biting Apparatus of Brazilian Insect, the Triatoma Megista. (Apparelho salivar do barbeiro.) M. Torres.

January 15, No. 3, pp. 17-24

117 Ulcerating Granuloma; Two Cases. O. Torres. Commenced in No. 2.
118 The Local Reaction to a Mosquito Bite an Element in the Defense against Malaria. J. A. de Magalhães.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIII, No. 1, pp. 1-196, German Edition. Last indexed June 6, 1914, p. 1854

119 *Comparative Microscopic Anatomy of Vertebrates. (I: Verdauungsorgane der Anurea.) G. Osawa.
120 The Mite Causing Japanese River Fever. (VII. Aetiologie der Tsutsugamushikrankheit.) M. Ogata and M. Takenouchi.
121 Cultivation of Rat-Bite Fungus. (Kultur des Rattenbissfadenpilzes auf festem Nährboden.) M. Ogata.
122 *Sugar Content of the Blood. (Blutzuckergehalt beim gesunden und kranken Menschen.) R. Watanabe and K. Sakaguchi.
123 Improved Technic for Determination of Sugar Content of Blood and Milk. (Kleine Modifikation der Pavy-Kumagawa-Sutoschen Zuckerbestimmungsmethode für geringe Zuckermenge.) Z. Hatta.
124 *The Pancreas Secretion with Abnormal Gastric Secretion. (Pankreassekretion bei Sekretionsstörungen des Magens.) S. Okada.
125 Oxidase Reaction in Sections of Tissues. (Ueber Oxydasereaktion an Gewebsschnitten.) Y. Ikeda.
126 Action of Beriberi Serum on Frog's Vessels. (Vasokonstriktorische Wirkung des Serums von Kakke-Kranken auf die überlebenden Froschgefässe.) S. Sakai and T. Hiramatsu.

119. **Comparative Microscopic Anatomy.**—This finely illustrated article is a microscopic study of the digestive organs of thirteen different species of frogs and toads.

122. **The Sugar Content of the Organic Fluids.**—In the research reported an alimentary increase in the sugar content of the blood was evident in both the healthy and those with nephritis and exophthalmic goiter. In diabetes the sugar content in the blood sometimes persisted abnormally high long after the sugar had disappeared from the urine. This should be heeded in treatment. It was found further that the ability of the kidneys to retain sugar was much greater than had been supposed.

124. **Pancreas Functioning with Abnormal Secretory Functioning in the Stomach.**—Okada extols the duodenal pump as a more reliable means of studying pancreas functioning than by the oil breakfast or examination of the stools. When gastric secretion is deranged, pancreas secretion is increased, as if to compensate for the defective digestion in the stomach. He found the casein test for determining the presence of trypsin in fluids, a simple, rapid and reliable method.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

January 30, I, No. 5, pp. 349-408

127 *The Albumin Reaction in the Sputum. (De eiwitproef van het sputum.) E. P. Snijders.
128 Church and Science in the Fifteenth Century. (Kerk en wetenschap in Vesalius' dagen.) B. W. T. Nuijens.
129 Combined Radiotherapy of Ear Disease. (Behandeling van oorziekten door middel van radium en mesothoriumbestraling.) F. H. Quix.

February 6, No. 6, pp. 409-488

130 Medical Impressions of the War. (Oorlogsindrukken.) O. Lanz.
131 *The Aberhalden Reaction in Nervous and Mental Disease. L. Bouman and J. A. Van Hasselt.
132 Huge Retroperitoneal Cystomyoliposarcofibroma. G. A. Van Leeuwen.

February 13, No. 7, pp. 489-568

133 *Severe Forms of Functional Insufficiency of the Gastro-Intestinal Glands in Infants. (Maag- en darmachylie bij kinderen in de eerste levensjaren.) H. A. Stheeman.
134 *Preparation of Buttermilk for Infant Feeding. (Een nieuwe wijze van toebereiding der karnemelk voor zuigelingen.) J. Stärcke-Polenaar.

127. **The Albumin Reaction in the Sputum.**—Snijders' own experience confirms the general consensus of opinion that albumin in the sputum is a sign merely of some disturbance in circulation or infectious process in the lower air passages. It is no more specific for pulmonary tuberculosis than the diazo reaction, but like that, may be valuable as corroboratory evidence. At the same time, he adds, it might prove extremely instructive if large numbers of young people with high albumin content were kept long under observation to determine whether hitherto latent tuberculosis may not be responsible for it. An albumin content over one-half per thousand might perhaps suggest a search for tubercle bacilli. It might also prove instructive if the albumin content of the sputum were to be systematically recorded after injections of tuberculin. If the albumin content increased, then an activation of the tuberculous process might be assumed.

131. **The Protective Ferments in Nervous and Mental Disease.**—Bouman and van Hasselt tabulate the findings with the Abderhalden test in 123 persons, including 7 supposedly normal persons. In one of this group there was a weak digestion of brain, ovary and thyroid tissue and in another of brain and suprarenal tissue; in another, of ovary tissue alone, and in another of thyroid and suprarenal tissue. These positive responses in the healthy warn against relying on this test for differential diagnosis under any circumstances. In the 38 dementia praecox cases there was notable digestion of brain tissue in 22 cases and of thyroid tissue in 25. In 14 manic-depressive cases there was only very slight digestion of brain tissue in one case and of thyroid tissue in 4. In paralytic dementia there was notable digestion of brain tissue in 8 out of 10 cases; of thyroid tissue in 3 and of testicle tissue in 6 of the 9 men. Paralytic dementia alone gave the same responses with both the old and the new technics, brain

tissue being regularly digested with both. Epilepsy showed a regular hodgepodge of responses, with no apparent connection with seizures. On the whole, they conclude that to date no reliance can be placed on the Abderhalden test in these conditions although it is possible that improved technic may realize the attractive hypothetical possibilities in it. They are inclined to think that suggestion has been a considerable factor in the matter. At the same time they intend to continue their clinical research on the subject as it seems probable that schizophrenia is connected in some way with the internal secretions and that protective ferments must develop in consequence.

133. **Gastro-Intestinal Secretory Insufficiency in Infants.**—Stheeman describes five cases of the severer form of stomach and intestinal achylia or pluriglandular insufficiency of the gastro-intestinal system—the bankruptcy of the chemistry in the stomach or intestines or both. The children were from 13 to 30 months old. The resulting dyspepsia with its abnormal products, the fermentation processes with their influence on the general metabolism (acidosis), and the catarrhs with their waste of mineral elements, all aid in maintaining the vicious circle, and the resulting condition, the "decomposition," makes rapid progress. The emaciation, the dry skin, the albuminuria, are all signs of this vicious circle, as also the symptoms on the part of both the peripheral and central nervous system. They amounted to actual tetany in one case; in others the nervous symptoms resembled those with poliomyelitis or beriberi; he adds that nervous symptoms of this character are never encountered in simple "infantile atrophy." The intensity of the nervous manifestations rose and fell parallel with the intestinal and general phenomena, and he regards this as evidence that a single cause is responsible for both. There is evidently some constitutional physical inferiority; the tetany testifies to functional weakness on the part of the parathyroids, and the intestinal insufficiency to functional weakness of the pancreas, and recent research has shown that the hormones of the parathyroids and pancreas reenforce each other.

When the general condition improved under dietetic measures the superficial and tendon reflexes returned and the nervous symptoms became attenuated, but he did not succeed in any of these cases in restoring the nervous system to normal stability. In one infant the vomiting—the only symptom of the spasmophilic tendency—passed over into complete tetany, notwithstanding that the general condition had remarkably improved. The assumption that part of the disturbances are the consequences of an avitaminosis is sustained by the fact that the anomalies in the reflex system became corrected as the general condition improved. On the other hand, danger lurks in the uniformity of the diet which the condition requires. One of the infants developed scorbutus as a result of this, falling thus from one avitaminosis into another as the first one was corrected. This shows how hard it is to find a food which combines digestibility, sufficient calories, and these "imponderables." A diet such as is ordered for rachitis is not indicated. The digestion of albumin is comparatively little impaired. Milk should be the main reliance; if this is not tolerated, buttermilk or albumin milk. Albumin milk is used extensively in his service, made from unboiled milk. If a little starch is allowed later it must be dextrinized. As the child improves, gruels, bouillon-rice and cocoa may be added. He always makes extensive use of the juices of fresh fruit, and gives minute doses of cod liver oil, alone or combined with phosphorus (when there is a spasmophilic tendency), and calcium chlorid. In a number of less severe cases unmistakable improvement in the glandular functioning followed the administration of cod liver oil. The catarrhal condition is treated with mild astringents, or a mild Carlsbad course of treatment. He emphasizes also the advantages of a consommé soup for two of the five feedings. The veal (*Kalfspoulet*), rice and vegetables are cooked for three hours in an airtight pot and the soup is then served well strained. As the child improves, some of the meat can be put through a sieve and given with the soup, as the digestion of albumin is comparatively normal in the cases in question.

134. **Preparation of Buttermilk for Infant Feeding.**—Polenaar states that this can be much facilitated by mixing the small amount of flour required (usually from 10 to 15 gm. to the liter), with about as much water as usually evaporates from a liter in the course of the cooking, namely, about 100 gm. of water. The flour is stirred into this small amount of water and thoroughly cooked. Then the liter of buttermilk is stirred in, a very little at a time, until the whole is well blended and has cooked together. By this time the small amount of water added at first has usually been evaporated, so that the whole represents now merely a liter or less. The procedure takes only fifteen or twenty minutes on a gas stove, and buttermilk cooked in this way does not separate on reheating as usually happens with other methods.

Hospitalstidende, Copenhagen

February 3, LVIII, No. 5, pp. 105-128

135 *Diagnosis of Duodenal Ulcer. O. Wulff.

135. **Diagnosis of Duodenal Ulcer.**—This communication from Rovsing's service gives the results of comparison of the symptoms and clinical course with the operative findings in 118 cases of gastric or duodenal ulcer. A good review of the literature on duodenal ulcer precedes the report, and the conclusions are summarized as follows:

The set of symptoms described by Bucquoy and Moynihan occur much more regularly with duodenal ulcer than with any other localization of an ulcer, but they are sometimes encountered with ulceration in the stomach or pylorus alone, near or at some distance from the pylorus. The set of symptoms described by Hartmann and Souppault, the *syndrome pylorique*, is also not peculiar to a pyloric or juxtapyloric ulcer as it may be observed with an ulcer higher up in the stomach or lower in the duodenum. It seems to be impossible therefore to diagnose beforehand with absolute certainty whether the ulcer is in the stomach or in the duodenum. In the 61 cases of gastric ulcer alone, the duodenal train of symptoms was presented exclusively and in its most typical form in 7, and not so clearly in 7 others. The *syndrome pylorique* was pronounced only in 1 out of 18 cases of actual pyloric ulcer; in 10 out of 15 cases of juxtapyloric duodenal ulcer, and in 5 out of 15 juxtapyloric gastric ulcer cases. Of the 39 duodenal ulcer cases all but 10 were men. The symptoms were of the characteristic Moynihan type in only 12 of the total 39. In 21, occult hemorrhage aided in the diagnosis, but in 18 cases there was absolutely nothing to indicate whether the ulcer was in the stomach or duodenum.

Ugeskrift for Læger, Copenhagen

February 4, LXXVII, No. 5, pp. 175-208

136 *Phlegmons Around the Ear in Scarlet Fever. (Om periaurikulære Abscesser ved Scarlatina.) S. T. Sørensen.

136. **Phlegmons Around the Ear in Scarlet Fever.**—Sørensen reports that this complication was noted in 54 among 4,000 cases of scarlet fever at the Blegdam Hospital in two recent years. In 5 cases an abscess developed on both sides. In the operative cases the abscess was opened down to the bone and drained, and when the bone was carious it was scraped away down to sound tissue. The ear was treated by rinsing it out and instilling a weak aqueous solution of iodin. None of the patients died under conservative measures, although in many the scarlet fever had been of the severest type. In 42.3 per cent. of the total number, on discharge, the ear and its environment were clinically normal; in 46.2 per cent. the ear or the abscess was still discharging, and in 11.5 per cent. the abscess was still angry. In 2 cases only the abscess subsided under conservative measures alone. In his total experience with 30,000 scarlet-fever cases he has scarcely ever encountered meningitis or suppuration in the brain. Consequently he does not advise radical treatment unless there seems to be special danger of involvement of the brain. Relative indications are afforded by signs of beginning pyemia. Under other conditions he advises to wait until the scarlet fever or streptococcus infection has run its course. The operation thus should not be attempted until after the patient has left the contagious disease ward. No complications developed in any of his cases treated on these principles.